AT&T

PRO SIXTEEN PRESENTATION PROGRAMMER

OPERATION MANUAL

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7
8-12
14-28
31
32
32
33,34
35
35
37-39
40-42
41
43-45

TABLE OF CONTENTS

1. Introduction

Synchronization 1
Make Up of a Sequence 2
Creating a Show 2

2. Basic Programming - Step by Step

Creating a Show 3
Running a Show 7
Editing a Show 8-12
Creating with Special Effects Keys 14-28
Copy/Swap 31
Set-Up 32
Menu Show Size/Memory Available 32
Menus of the Pro Sixteen 33,34
Storing the Show Program on Tape 35
Load 36

3. Time Code 37-39

Generating Time Code 40-42
Synchronizing to Time Code 41
Editing Sequence Sync Times 43-49
Live Cue Sequence 48

4. Advanced Editing 48-54

Standby 54
Create Key 55
Display Messages 55
Change Key 56

5. Making Show Tapes 56-60

6. Playing Show Tapes 61-63

. Miscellaneous .....

Tray Start Position 63
Go To Key Show Number Sequence End of Show.. 65,66
Enhanced Mate-Trac Signal for SPCs 69
Printing 77
Displays 78
Difference Between a TO ADV and a FA ADV 79
Updating System Software of Pro Sixteen 80-82

8. Glossary

9. Index

10. Videodisc Player - Controlling
.-- see Pro Sixteen-V Supplemental Manual

Introduction

Programming a show involves many different operations. First there is Create ... which means entering instructions into the programmer.

There is the sync operation, which involves a time code generate and receive, or pressing of the Run key. This synchronizes the instructions with the audio track.

Editing involves making changes to the show in the programmer. Some of the Edit operations are: Change, Insert and Delete.

Saving involves: Save, Load and Verify operations. Save will store the show memory on tape or disk for future updating of the show.

Each of these operations is explained in this manual.

Programming with Arion Pro Sixteen is very simple. The programmer (Help key) prompts which entry is to be entered next.

There are four basic entries that are programmed for each visual action. These are:

1. What visual is to appear (projector #)
2. At what rate is the lamp of the projector to fade on or off
3. When the lamp fades off, should the tray advance
4. Is this the end of this sequence or is a delay time (wait) to be entered before the next visual action.

The Pro Sixteen further reduces the number of entries by automatically storing dittos for the Rate, To Adv, and Wait times if they are to be the same as in the previous entry. Therefore most of the key strokes are projector keys, Wait or End of Sequence key and the Accept key.

Fast and simple.

Time Code is available in either 30 frames per second or 25 frames per second. When "SMPTE" is stated, the time code is 30 frames per second. When 25 frames per second is used, it is referred to as "EBU".

Five Basic Steps When Making a Show

1. Record an audio track on tape.
2. Record the Time Code signal on another track of the audio tape.
3. Program a few sequences into the Pro Sixteen.
4. Connect the output of the tape recorder into the input of the Pro Sixteen. Play the tape; while listening to the audio, press the Run key of the Pro Sixteen. This assigns a sync time to each sequence in the programmer.
5. Rewind tape and play. Watch the show; if out of sync, adjust the sync times.

ACCEPT completes an entry which becomes a part of the show program stored in the Pro Sixteen memory.

SPECIAL EFFECT KEYS are used to create frames that turn on auxiliaries, fade lamps to partial brightness, start animations, etc.

REPEAT is used when sequences or frames are to execute many times automatically. The beginning is (START REPEAT) and the end is (REPEAT # TIMES). Projectors can be advanced in repeats.

LOOP is used when the beginning is (START LOOP) and the end is (LOOP # TIMES). Projectors do not advance until the loop ends.

HOME creates a frame that resets the trays to the starting position.

AUXILIARY creates frames that switch on and off auxiliaries such as power controls, tape recorders, etc. Lamp keys select the auxiliaries.

FADE TO LEVEL creates frames that fade lamps to 10 levels of brightness. Level 1 is 10% full brightness; level 10 is full brightness.

NEXT SHOW creates frames that will cause the memory to go to the beginning of the next show. At the end of last show, returns the memory to the start of the first show.

START FLASH creates frames that start animations. These frames set up flash on/flash off ratios for lamps. The proportion of flash on to flash off time is measured in tenths of a second, and is entered using the number keys.

STOP FLASH creates frames that stop animations. These frames clear flash ratios.

FORWARD creates frames that advance projector trays individually.

REVERSE creates frames that reverse projector trays individually.

Forward and reverse move trays independently of lamp activity. Lamps that are on, remain on; lamps that are off, stay off.

SHOW PROGRAM PLAYBACK keys run the show program stored in the Pro Sixteen memory.

RESET — returns the Pro Sixteen to the start of the show program and resets the trays, ready to run the first show program sequence.

RUN — plays back each show program sequence, and is used when syncing the show to time code.

SHOW PROGRAM ACCESS KEYS are used to review the show program in the Pro Sixteen memory.

BACK ◀ — (PREVIOUS FRAME) is used to move backward, frame by frame, through the show program.

HELP ▶ — (NEXT FRAME) is used to move forward, frame by frame, through the show program.

PREV ▲ — (PREVIOUS SEQUENCE) is used to move backward, sequence by sequence through the show program.

NEXT ▼ — (NEXT SEQUENCE) is used to move forward, sequence by sequence, through the show program.

GOTO — is used to go immediately to any place in the show program. Use number keys to select the sequence and frame. Press the number of the sequence and for the frames, press the decimal point key and then the frame number. Then press ACCEPT to go to the selecting sequence. Go To also is used to go to any show in memory.

EDITING KEYS are used to make changes in the show program. Pressing ACCEPT makes these changes part of the show program.

ESCAPE — is used to leave create, stop the running of a sequence, or to get into edit.

CHANGE — is used to alter any entry in the show program.

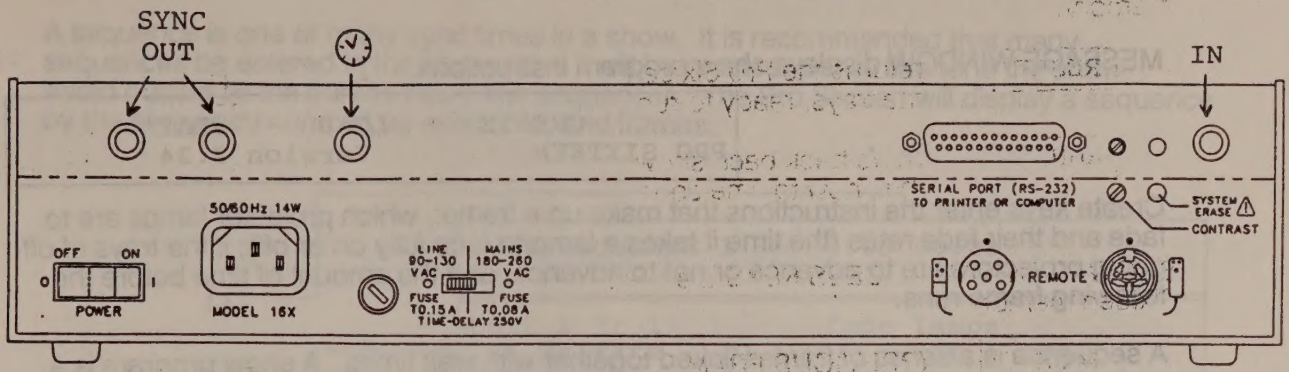
INSERT — is used to add frames or sequences to a show program.

DELETE — is used to remove frames or sequences from a show program.

COPY — is used to move a show programmed on one bank to another bank (SWAP).

MENU — is used to select additional functions of the programmer.

PRO SIXTEEN REAR PANEL



Mains Voltage switch is set to match local voltage ratings.

To change voltages: unplug the Pro Sixteen power cord; unscrew the switch retaining plate; select the correct voltage; change the fuse to match the voltage rating, and then reattach the retaining plate.

115/230V socket: plug the power cord in here.

Mains Power switches power on and off to the Pro Sixteen.

Fuse protects the Pro Sixteen circuitry. 230 V AC: use 80 mA SLO-BLO; 115 V AC: use 150 mA SLO BLO.

Sync Out is for sending out Mate-Trac to dissolve controls and tape recorders.

Time Out is for sending out Time Code signal.

In is used for loading show programs and receiving Time Code or Mate-Trac.

SYNC OUT, TIME OUT, and IN use 1/4" mono phone jacks.

Remote EK Type/DIN Type are for running the show program using a compatible remote control plugged in here. Pressing the remote control forward runs the sequence that appears in the message window; pressing the reverse button goes back to the start of the previous sequence.

Contrast adjusts message window contrast. Clockwise increases contrast; counterclockwise decreases contrast.

System Erase is only used when updating the system software.

Serial Port is for connecting to printer or computer via RS-232.

The Pro Sixteen Keyboard

MESSAGE WINDOW displays show program instructions.

```
        CREATE  -  LOAD  -  PLAY
PRO SIXTEEN          Version 2.34
```

Create keys enter the instructions that make up a frame: which projector lamps are to fade and their fade rates (the time it takes a lamp to fade fully on or off); if the trays of off-going projectors are to advance or not to advance, and the amount of time before the following frame runs.

A sequence is a series of frames linked together with wait times. A show program is a series of sequences. A sequence runs, from frame to frame, until reaching the next sequence. Pressing RUN starts the next sequence.

BOXED words are keys on the keyboard.

CREATE gets the Pro Sixteen ready to create a show.

HELP guides you through frame creation if you need help.

PROJECTOR LAMPS KEYS turn on and off lamps.

A
1
2
3
4

There are 4 vertical banks of keys: A, B, C, D.
The 4 keys in each bank control lamps of projectors connected to dissolve controls having the same bank setting.

Arion bank settings A, B, C, D are labeled 1, 2, 3, 4 on Kodak dissolve controls.

PROJECTOR LAMP INDICATORS light when lamps are on. The lamp is currently off: △▽ (both unlit). The lamp is currently on: ▲▼ (both lit). The lamp is to fade on in this frame: ▲▽ The lamp is to fade off in this frame: △▼

NUMBER KEYS (0 through 9, etc.) set fade rates, wait times, and are used when other numbers are needed. **C** clears mistaken number entries.

TO ADV is used when trays of the off-going projectors are to advance.

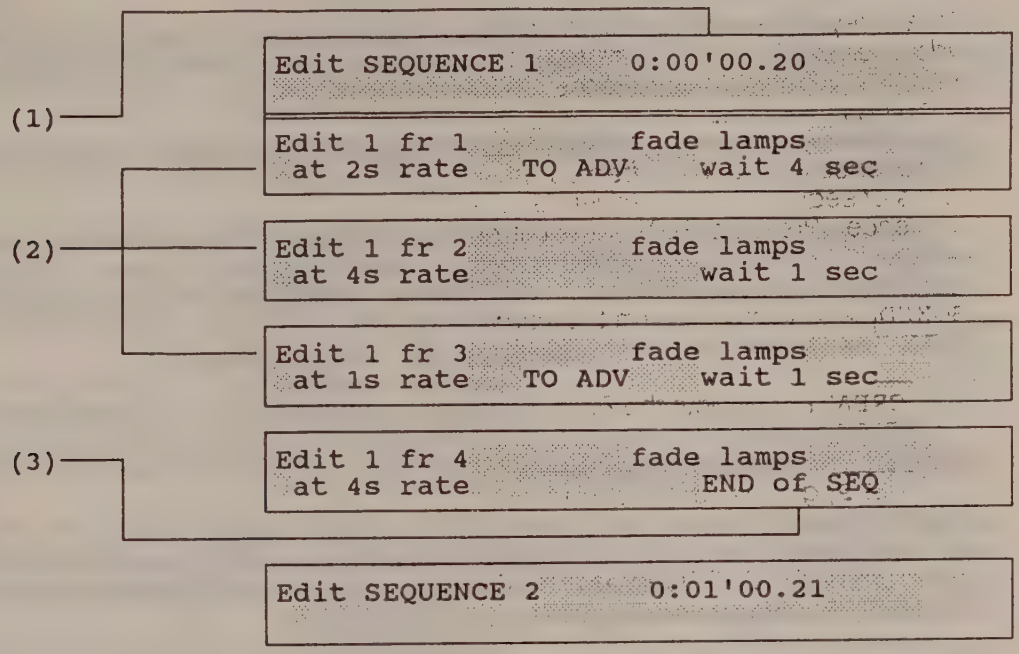
NO ADV is used when the trays of off-going projectors are not to advance.

WAIT is used when additional frames are to be in a sequence. The time of the wait is entered using the number keys.

END SEQ is used when a new sequence is to be created.

Make-Up of a Sequence

A sequence is one of many sync times in a show. It is recommended that many sequences be entered in the show since it will be much easier to fine tune the show. Avoid putting all the frames into a few sequences. The Pro Sixteen will display a sequence by the sequence number, its sync time, and frames.


(1)
Edit SEQUENCE 1 0:00'00.20
Edit 1 fr 1 fade lamps
at 2s rate TO ADV wait 4 sec
(2)
Edit 1 fr 2 fade lamps
at 4s rate wait 1 sec
Edit 1 fr 3 fade lamps
at 1s rate TO ADV wait 1 sec
(3)
Edit 1 fr 4 fade lamps
at 4s rate END of SEQ
Edit SEQUENCE 2 0:01'00.21

(1) Sync Time - is the time that a sequence is to execute when playing Time Code from tape

(2) Frames - there can be one or more, each consisting of action cues and each divided by a Wait time

(3) END of SEQ - this marks the last frame of a sequence

Creating a Show

Before starting to Create a show, turn on the power to the Pro Sixteen Programmer.

Display reads:

```
CREATE - LOAD - PLAY
PRO SIXTEEN Version 2.34 (XXXX)
```

Press the Menu key and continue pressing to view all of the many choices available in the Pro Sixteen. After pressing the key through the entire menu only one choice is important before the start of Creating. This is in Menu #8.

If using SPC controls exclusively in the show operation, take advantage of the new enhanced cues by selecting the Number 2 key (2=ON). See page 69 for this operation.

If using the standard dissolve controls such as Two Plus, Four Plus or Kodak, the enhanced cue selection should be in the (1=OFF) position. The other menu choices are described in the SMPTE, Print, Play, Display, RS-232, etc. sections of the manual.

BASIC PROGRAMMING: The purpose of this section is to become familiar with the programming features of the Pro Sixteen.

Creating a Show Program

Create a simple 2 projector program.

Programming is done using the projector lamp keys A1 and A2. Keys shown to the left of the displays, are to be pressed. Number keys are shown as #. Message window displays are shown as an aid.

Connect two projectors, a dissolve control, and the Pro Sixteen. Set the dissolve control bank switch to A.

1. Start with a clear memory. Press Escape. Press Menu until Menu #0 appears. If ACCEPT to ERASE all SHOWS appears, press Accept key to erase. If there is no show in memory the menu will read ACCEPT to UN-ERASE SHOWS, press Create key.

When the Create key is first pressed, a sync point appears:

```
CREATE SEQUENCE 1   Sync Time ??
                                ?:??'??
```

At this point there are two choices:

A. If the sync time is known, it is entered, or
B. If no Sync Time is to be entered (?? marks to remain), a Lamp key or any other programmable key is pressed. The sequence sync time will disappear and the first frame of the sequence will appear.

The sequence with ?? sync time has been stored for future syncing to Time Code.

2. Create sequence 1 frame 1. Projector 1 is to fade on at an 8 second rate. There is a wait time of 2 sec. before frame 2 runs.

Fade on Lamp [A1]

```
CREATE 1 fr 1        fade lamps
```

Confirms that a lamp has been selected.

-A lit upward triangle ▲ indicates a lamp being faded on. A lit downward ▼ triangle indicates a lamp being faded off.

-If a wrong lamp is turned on press the Lamp key again to cancel the entry.
Select an 8 second fade rate.

[#8]

```
CREATE 1 fr 1        fade lamps
 at 8s rate
```

-If a wrong fade rate is selected, press the C key to clear the fade rate. Then enter the correct fade rate.

This frame has a wait time.

[WAIT]

```
CREATE 1 fr 1        fade lamps
 at 8s rate              wait"??.??"sec
```

How long is this wait time to be?

NOTE: Many times a wait is not desired since execution may be a word cue. In such a case, End of Sequence key would be used in place of wait.

Select a 2 sec. wait

Press [#2]

```
CREATE 1 fr 1          fade lamps
 at 8s rate              wait 2 sec
```

- Clear mistaken wait times by pressing the C key. Then enter the correct wait time.

Press [ACCEPT]

```
CREATE 1 fr 2
```

Frame 1 becomes the first frame of the show program when Accept is pressed. Lamp 1 fades on. The Pro Sixteen is now ready to create sequence 1, frame 2.

- When both the upward and downward triangles are lit ▲▼ this indicates a lamp has been faded on in a previous frame and is currently on.

- Lamps that are faded on remain on until another frame fades them off.

- Frames can have long fade rates and short wait times. A lamp slowly faded on or off in a frame with a short wait time continues and completes its fade even as following frames are executed.

- The Pro Sixteen has more than 64 fade rates: 0 (hard cut), 0.2 (cut rate), 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5 through 15, and even rates 16 through 98. If single projector controls SPCs are used, the rates in .1 of a second to 9.9 seconds can be programmed.

- Wait times can be between 0.05 seconds and 99.99 seconds. Frames that have different fade rates should be separated by a minimum 0.10 wait time. Frames that have the same fade rates can be separated by a minimum 0.05 wait time.

3. Create sequence 1, frame 2. Projector 2 is to fade on at a 1 second rate. Projector 2 will superimpose the visual of projector 1 which is presently on ▲▼. There is a wait time of 10 seconds before the next frame is to run.

Fade on lamp 2 [A2]

```
CREATE 1 fr 2          fade lamps
```

Select a 1 sec fade rate. [#1]

```
CREATE 1 fr 2          fade lamps
 at 1s rate
```

This frame is to have a wait time.

Press [WAIT]

```
CREATE 1 fr 2          fade lamps
 at 1s rate              wait"2"sec
```

A ditto 2 sec. wait time appears since this was the previous wait time. Ditto appears until a different wait time is selected.

Enter a 10 second wait. [#1] [#0]

```
CREATE 1 fr 2          fade lamps
 at 1s rate              wait 10 sec
```

Press [ACCEPT]

```
CREATE 1 fr 3
```

This is now the second frame of the show program. Lamp 2 fades on. The Pro Sixteen is now ready to create sequence 1, frame 3.

4. Create sequence 1, frame 3. Lamp 1 is to fade off at a 2.5 second rate. After this lamp fades off, its tray is to advance. Instead of a wait time there is an end of sequence This sequence ends with this frame. After lamp 1 fades off, its tray is to advance.

A1	CREATE 1 fr 3 fade lamps
#2 #. #5	CREATE 1 fr 3 fade lamps at 2.5s rate

After lamp 1 fades off, its tray is to advance.

TO ADV END SEQ	CREATE 1 fr 3 fade lamps at 2.5s rate TO ADV END of SEQ 1
ACCEPT	CREATE SEQUENCE 2 Sync Time ?? ?:??'??

Frame 3 is accepted into memory. Lamp 1 fades off and its tray advances. The Pro Sixteen is ready to create sequence 2,frame 1.

5. Create sequence 2, frame 1. Lamp 2 is to fade off as lamp 1 fades on (a dissolve), both fading at a 3 second rate. After lamp 2 finishes fading off, its tray is to advance. There is a wait time of 6.5 sec. before frame 2 is to run.

A1 A2	CREATE 2 fr 1 fade lamps
#3	CREATE 2 fr 1 fade lamps at 3s rate
WAIT	CREATE 2 fr 1 fade lamps at 3s rate "TO ADV" wait"10"sec

When Wait key is pressed, the TO ADV and Wait 10 sec. are automatically dittoed since they were in the previous frame. This saves key strokes thus saving programming time.

Enter a new wait time.

#6 #. #5	CREATE 2 fr 1 fade lamps at 3s rate "TO ADV" wait 6.50 sec
ACCEPT	CREATE 2 fr 2

Lamp 2 fades off as lamp 1 fades on. After lamp 2 finishes fading, its tray advances. The Pro Sixteen is ready to create sequence 2, frame 2.

When dissolving between two visuals, it is necessary to press 2 keys. One for the projector that is currently on (it will fade off), and one for the projector to come on.

6. Create sequence 2, frame 2. Lamp 1 is to fade off and lamp 2 is to fade on (dissolve) at the 3 second rate. After fading off, lamp 1 is to advance its tray. Sequence 2 ends with this frame.

A1	CREATE 2 fr 2 fade lamps
END SEQ	CREATE 2 fr 2 fade lamps at"3s"rate "TO ADV" END of SEQ 2

STOP! Correct a mistake before accepting this frame. Lamp 2 should fade on as lamp 1 fades off.

Fade on lamp 2.

A2	CREATE 2 fr 2 fade lamps at"3s"rate

- Before accepting this frame, backspace [◀] can be used to go back into the frame to change the fade rate, otherwise press the Lamp, Wait, End Seq, To Adv, or No Adv keys to correct the entries.

Enter this frame into memory.

ACCEPT	CREATE SEQUENCE 3 Sync Time ?? ?:??'??

Lamp 1 fades off as lamp 2 fades on, both at a 3 second rate. After lamp 1 finishes fading, its tray advances.

This is a print out of the show created on pages 3, 4, 5, 6.

SHOW starts w/Trays at 1

SEQUENCE 1

fr 1 fade lamps A at 8s rate	wait 2 seconds	
fr 2 fade lamps B at 1s rate	wait 10 seconds	
fr 3 fade lamps a at 2.5s rate	TO ADV	END of SEQ 1

SEQUENCE 2

fr 1 fade lamps Ab at 3s rate	"TO ADV"	wait 6.50 seconds
fr 2 fade lamps aB at"3s"rate	"TO ADV"	END of SEQ 1

This completes creating a show.

- A lamp needs time to complete its fade before it can be used again. For example, a lamp faded on at a 3 second rate should not be faded off until 3 seconds have passed. Frames that fade other lamps can be programmed between the frame that fades this lamp on and the frame that fades this lamp off.

- A lamp that is fading off and then advancing its tray, needs an additional 1.5 seconds to advance its tray before that lamp can be faded on again. For example, 4.5 seconds must pass before a lamp faded off at a 3 second rate and advanced can be faded back on (3.0 seconds to fade off, 1.5 seconds for tray to advance).

3 sec fade off	1.5 sec to adv

NOTE: When creating a show, wait times are only used when frames are to be executed automatically within a sequence.

Beginners should avoid using wait times until becoming more experienced in designing and planning shows.

Running a Show

1. Reset to the beginning of the show program.

RESET

```
SEQUENCE 1
```

Ready to run the show program.

When Reset is pressed, lamps turn off and trays reset to their starting positions.

Run sequence 1.

RUN

```
SEQUENCE 1 fr 2
                    wait 2 sec
```

Frame 2, the next frame to run is shown. Frame 1 is now running. Its 2 second wait is counted down.

```
SEQUENCE 1 fr 3
                    wait 10 sec
```

```
SEQUENCE 2
```

Ready to run sequence 2.

As the show program runs, the message window displays the next frame while the wait time of the frame that is running is counting down.

- Press Escape to stop a running sequence. Press Run to restart.

Run sequence 2.

RUN

```
SEQUENCE 2 fr 2
                    wait 6.50 sec
```

```
END of SHOW
```

- Sequences can be remotely controlled by pressing the Forward key on a remote control that is plugged into the remote input of the Pro Sixteen.

Editing Using the Change Key

Change key has a new feature incorporated. Whenever the Change key is pressed while editing, it is not necessary to step back in the frame to change a lamp cue. Pressing any of the lamp keys is enabled, this speeds up the editing process. End of sequence or wait time can be changed by pressing the End Sequence key or the Number keys. Pressing the Number keys, when the end of the sequence appears in the display, will change end of sequence to a wait without pressing the Wait key. Pressing the To Adv or No Adv keys without stepping back is possible. This means that the only time the Backspace key is used in the change mode, is when the "fade rate" is to be changed.

Keep the show program in memory. Change sequence 1, frame 1. Lamp 2 is to fade on with lamp 1, at a 4 second rate instead of an 8 second fade rate. Change the 8 second wait time to 0.50 seconds.

1. Return to the beginning of the show program.

RESET

```
SEQUENCE 1
```

See the sequence 1, frame 1

▶

```
Edit 1 fr 1          fade lamps
                     wait 2 sec
```

Get ready to change frame 1.

CHANGE

```
CHANGE 1 fr 1        fade lamps
 at 8s rate          wait 2 sec
```

The lamps, fade rate, and wait time in this frame can now be changed. Change the wait time to 0.50 seconds.

#. #5

```
CHANGE 1 fr 1        fade lamps
 at 8s rate          wait 0.50 sec
```

2. Step back to change the fade rate to 4 seconds.

◀ #4

```
CHANGE 1 fr 1        fade lamps
 at 4s rate
```

Fade on lamp 2.

A2 ACCEPT

```
CHANGE 1 fr 1        fade lamps
```

The changes are now part of the show program. Frames are not changed until Accept key is pressed. Press Escape to leave a frame unchanged.

3. Step back to see the changed sequence 1 frame 1.

◀

```
Edit 1 fr 1          fade lamps
 at 4s rate          wait 0.50 sec
```

- Once a lamp fades on, it stays on until a frame telling it to fade off is reached. If, as a result of editing, the same lamp is told twice to fade on in separate frames, the fade on entry in the second frame for this lamp is ignored. Similarly, a lamp faded off stays off until a frame telling it to fade back on is reached. A fade off command for a lamp already off is ignored.

IMPORTANT: When two or more projectors in the same bank are on, making a change or an insert in that bank requires more changes. Study this example carefully, it solves possible program questions.

Example shows A1 turned on in fr 1 and off in fr 5 (which was fr 4 before fr 2 was inserted).

fr 1	A1	A3	on
fr 2	A1		off -- if this off was inserted
fr 3	A1		on these were ons before, therefore
fr 4	A1		on -- they must be changed to offs.
fr 5	A1		off

4. Step forward to see sequence 1, frame 2.

```
Edit 1 fr 2          fade lamps
 at 1s rate          wait 10 sec
```

In the original show program, lamp 1 was faded on in frame 1. Lamp 2 was faded on in frame 2. In the changed show program, both lamps 1 and 2 are faded on in frame 1. The fade on entry for lamp 2 in frame 2 is ignored, but the wait time remains in effect.

5. Press Reset to return to sequence 1. Press Run to run sequence 1. Press Run to run sequence 2.

- When instructions (fade rates, wait times, etc.) in a frame are changed, dittoed (" ") instructions in the following frames are also changed.

See Ditto instructions on pages 12 and 13.

Editing Using the Insert Key

Keep the show program in memory. Insert a new frame at the beginning of sequence 2. This new frame turns on auxiliary 3.

1. Return to the beginning of the show program.

RESET

```
SEQUENCE 1
```

ESCAPE

```
Edit 1 fr 1
```

GO TO

```
Edit 1 fr 1
 Go To SEQUENCE 0
```

Use the Number keys to select the sequence and frame.

[#2] [#.] [#1]

```
Edit 1 fr 1
 Go To SEQ 2 fr 1
```

[ACCEPT]

```
Edit 2 fr 1          fade lamps
 at 3s rate   "TO ADV"   wait 6.50 sec
```

2. To insert a new frame.

[INSERT]

```
INSERT 2 fr 1
```

Turn on an auxiliary in this frame.

[AUXILIARY]

```
INSERT 2 fr 1          AUXILIARY
```

An auxiliary is turned on in this frame.

- Lamp keys turn on and off auxiliaries. Auxiliaries are either on or off. They have no fade rates.

Turn on auxiliary 3.

[A3]

```
INSERT 2 fr 1          AUXILIARY
```

Enter a 3 second wait time.

[WAIT]

```
INSERT 2 fr 1          AUXILIARY
                          wait"10"sec
```

[#3]

```
INSERT 2 fr 1          AUXILIARY
                          wait 3 sec
```

Press ACCEPT to make this inserted frame part of show program.

[ACCEPT]

```
Edit 2 fr 2          fade lamps
 at 3s rate   "TO ADV"   wait 6.50 sec
```

Auxiliary A clicks on. The inserted frame becomes the new frame 1. The original frames 1 and 2 are renumbered as frames 2 and 3.

- Frames are not inserted until ACCEPT is pressed. Press ESCAPE to leave without inserting.

Step back to see the new sequence 2, frame 1.

[▶]

```
Edit 2 fr 2          fade lamps
 at 3s rate   "TO ADV"   wait 6.50 sec
```

Step forward to see sequence 2, frame 2.

[◀]

```
Edit 2 fr 1          AUXILIARY
                          wait 3 sec
```

The original frame 1 is renumbered as frame 2.

Step forward to see sequence 2, frame 3.

```
Edit 2 fr 3          fade lamps
 at"3s"rate   "TO ADV"  END of SEQ 2
```

The original frame 2 is renumbered as frame 3.

- An inserted frame takes the frame number of the frame displayed in the message window. All following frames in the sequence are renumbered.

NOTE: When inserting a frame within a sequence the END SEQ key is disabled, only a wait time can be entered.

3. Press RESET to return to sequence 1. Press RUN to run sequence 1. Press RUN to run sequence 2. Note that auxiliary A clicks on at the start of sequence 2.

If lamp on/off entries are inserted, it is necessary to change all of the lamp entries relating to those projectors until they are addressed again.

IMPORTANT: When two or more projectors in the same bank are on, making a change or an insert in that bank requires more changes. Study this example carefully, it solves possible program questions.

Example shows A1 turned on in fr 1 and off in fr 5 (which was fr 4 before fr 2 was inserted).

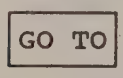
fr 1	A1	A3	on
fr 2	A1		off -- this off was inserted
fr 3	A1		on these were ons before, therefore
fr 4	A1		on -- they must be changed to offs.
fr 5	A1		off

To insert loops or repeats see pages 17, 18, 19, for loops and pages 14, 15, 16, 17, for repeats.

Editing Using the Delete Key

Keep the show program in memory. Delete frame 1 of sequence 2 from the show program.

1. Go to sequence 2, frame 1.



```
GO TO
```

```
Go To 1 SEQUENCE 2
```

```
#2  #.  #1
```

```
Go To 1 SEQ 2 fr 1
```

```
ACCEPT
```

```
Edit 2 fr 1          AUXILIARY
                      wait 3 sec
```

2. Get ready to delete.

DELETE

```
DELETE 2 fr 1          AUXILIARY
                       ACCEPT to DELETE
```

Ready to delete this frame.

ACCEPT

```
Edit 2 fr 1            fade lamps
 at 3s rate   "TO ADV"  wait 6.50 sec
```

Sequence 1, frame 1 is now deleted. Frames 2 & 3 are renumbered as 1 and 2.

The original frame 2 is renumbered as frame 1.

- Frames are not deleted until ACCEPT is pressed. Press ESCAPE to exit delete without deleting.

Step forward to see sequence 2, frame 2.

▶

```
Edit 2 fr 2            fade lamps
 at"3s"rate   "TO ADV"  END of SEQ 2
```

The original frame 3 is renumbered as frame 2.

3. Press RESET to return to sequence 1. Press RUN to run sequence 1. Press RUN to run sequence 2.

DITTOS

A ditto " " applies to a Fade Rate, Wait Time, or a projector TO ADV-NO ADV entry that is automatically repeated in each frame until changed.

Dittos are used to save time in programming; fewer key strokes are needed since the ditto duplicates the previous entry.

Changing one ditto in one frame will automatically change the same ditto in all of the following frames, this saves time when editing.

Erase the Pro Sixteen memory. Press Escape. Press the Menu until Accept to Erase all Shows appears. Press Accept to erase.

Get the Pro Sixteen ready to Create.

CREATE

```
CREATE SEQUENCE 1   Sync Time ??
                          ?:??'??
```

1. Create sequence 1, frame 1.

A1 | #1 | WAIT | #2

```
CREATE 1 fr 1          fade lamps
 at 1s rate                wait 2 sec
```

ACCEPT

2. Frame 2

A1 | TO ADV | WAIT

```
CREATE 1 fr 2          fade lamps
 at"1s"rate   TO ADV    wait"2"sec
```

ACCEPT

3. Frame 3

A2 WAIT ACCEPT

```
CREATE 1 fr 3          fade lamps
 at"1s"rate                wait"2"sec
```

4. Frame 4

A2 WAIT ACCEPT

```
CREATE 1 fr 4          fade lamps
 at"1s"rate   "TO ADV"  wait"2"sec
```

Note that only 2 key strokes were used in the last two entries. This is because the same fade rates and wait times are used and the dittos automatically duplicate the previous entries.

IMPORTANT: If only one ditto is to be changed, the following ditto frame must be changed to the original entry.

5. Press ← key and backspace until frame 2 appears.

◀

```
Edit 1 fr 2            fade lamps
 at"1s"rate   TO ADV    wait"2"sec
```

Proper procedure to change frame 2 fade rate from a 1 second to a 4 second rate is to step to the following frame (3).

▶

```
Edit 1 fr 3            fade lamps
 at"1s"rate                wait"2"sec
```

6. CHANGE ◀

```
CHANGE 1 fr 3          fade lamps
 at"1s"rate
```

#1

```
CHANGE 1 fr 3          fade lamps
 at 1s rate
```

The Ditto at "1s" rate will change to an original 1 second rate. ("Ditto" marks disappear).

Following Ditto frames will still be at "1s" rate.

7. ACCEPT

```
Edit 1 fr 4            fade lamps
 at"1s"rate                wait"2"sec
```

Step back to frame 2, its ditto is "1 sec" rate. Changing frame 2 to 4 second rate will not effect the following frames since frame 3 is now an original entry.

8. CHANGE ◀

```
CHANGE 1 fr 2          fade lamps
 at"1s"rate
```

9. #4

```
CHANGE 1 fr 2          fade lamps
 at 4s rate
```

ACCEPT

```
Edit 1 fr 3            fade lamps
 at 1s rate                wait"2"sec
```

Notice that frame 3 remains at the original 1 second rate as do all following dittos.

IMPORTANT: Whenever a ditto is to be changed, and if the following ditto frame is not to be changed, follow these steps.

1. Step to the frame to be changed. Step to the next frame. Change ditto in this frame to an original entry.

2. Step back to the previous frame and change its ditto to a new original entry.

This is a print out of the show created on pages 12, 13.

SHOW starts w/Trays at 1

SEQUENCE 1

fr 1	fade lamps A at 1s rate		wait 2 seconds
fr 2	fade lamps a at 4s rate	TO ADV	wait"2"seconds
fr 3	fade lamps B at"4s"rate		wait"2"seconds
fr 4	fade lamps b at"4s"rate	"TO ADV"	wait"2"seconds

END OF SHOW

Repeat Key

Repeat enables the actions programmed in a series of frames or sequences to repeat up to 999 times. Projector trays can advance in a repeat.

Frames to be repeated are placed between a START REPEAT frame and a REPEAT # TIMES frame. The START REPEAT frame marks the beginning of the repeat. A REPEAT # TIMES frame marks the end of the repeat.

Erase the Pro Sixteen memory. Press Escape. Press Menu until ACCEPT TO ERASE all SHOWS appears. Press Accept to erase.

Get the Pro Sixteen ready to create.

CREATE

```
CREATE SEQUENCE 1    Sync Time ??
                          ?:??'??
```

1. Create sequence 1, frame 1. This frame fades lamp 1 on at a 3 second rate and has a wait time of 4 seconds.

A1 #3 WAIT #4

```
CREATE 1 fr 1          fade lamps
 at 3s rate                wait 4 sec
```

ACCEPT

```
CREATE 1 fr 2
```

2. Create sequence 1, frame 2. This frame marks the start of the series of frames to be repeated. A Start Repeat is in the display by itself but it has the same frame number as the following entry.

REPEAT

```
CREATE 1 fr 2          START REPEAT
```

ACCEPT

```
CREATE 1 fr 2                              R=1
```

R=1 identifies the frames that are inside the original repeat statement, this is between the START REPEAT and REPEAT # TIMES.

3. Create sequence 1, frame 3. This frame dissolves lamp 1 into lamp 2 at a 3 second rate, advances the tray of lamp 1, and has a wait time of 5 seconds.

A1 A2 #3

```
CREATE 1 fr 2          fade lamps          R=1
 at 3s rate
```

TO ADV WAIT #5

ACCEPT

```
CREATE 1 fr 2          fade lamps          R=1
 at 3s rate   TO ADV     wait 5 sec
```

4. Create sequence 1, frame 4. This frame dissolves lamp 2 into lamp 1 at the 3 second rate, advances the tray of lamp 2 and uses the wait time of 5 seconds.

A1 A2 WAIT

```
CREATE 1 fr 3          fade lamps          R=1
 at"3s"rate    "TO ADV"   wait"5"sec
```

ACCEPT

```
CREATE 1 fr 4                              R=1
```

5. Create sequence 1, frame 5. This frame marks the end of the original repeat statement and sets the number of times the actions in frames 3 and 4 are repeated.

REPEAT

```
CREATE 1 fr 4          REPEAT ? TIMES
```

Replace ? with the number of repeats.

Frames 3 and 4 are to repeat 5 times.

#5

```
CREATE 1 fr 4          REPEAT 5 TIMES
```

It has a wait time of 4 seconds.

WAIT #4

```
CREATE 1 fr 4          REPEAT 5 TIMES
                            wait 4 sec
```

ACCEPT

```
CREATE 1 fr 14
```

When the REPEAT 5 TIMES frame is accepted, the Pro Sixteen assigns frame numbers to the repeated frames. These frames are added to the show program. Lamps and trays are advanced to the end of the repeat. This repeat advances both trays 5 positions and ends with lamp 1 on.

- To Edit a repeat, only the original frames within the START REPEAT frame and REPEAT 5 TIMES frame can be changed. R=1 in the display indicates these original frames. If the frames are not part of the original repeat cycle, CHANGE, DELETE, and INSERT are not active. There is one exception to this rule. The last frame of the last repeat will be either a wait time or end of sequence entry, this can be changed since it will determine the execution time of the event after the repeats.

- Before inserting or deleting the repeat entries (start repeat and repeat # times) be sure documentation is prepared to keep track of these two entries.

- To change repeat number times, step to the frame that displays.

	`Edit 1 fr 4  REPEAT 5 TIMES`
CHANGE	`CHANGE 1 fr 4  REPEAT 5 TIMES` `ACCEPT to CHANGE`
#3	`CHANGE 1 fr 4  REPEAT 3 TIMES`
ACCEPT	`Edit 1 fr 5  fade lamps  R=2` `at 3s rate  TO ADV  wait 5 sec`

Press Backspace to check that the number is now correct.

6. Create sequence 1, frame 10. This frame fades lamp 1 off at a 3 second rate, advances its tray, and ends the sequence.

CREATE A1 #3	`CREATE 1 fr 10  fade lamps` `at 3s rate`
END SEQ	`CREATE 1 fr 10  fade lamps` `at 3s rate  "TO ADV"  END of SEQ 1`
ACCEPT	`CREATE SEQUENCE 2  Sync Time ??` `?:??'??`

7. Press RESET to return to sequence 1. Press RUN to run this sequence.

- Inserting START REPEAT and REPEAT # TIMES into a series of frames with dittoed (" ") fade rates and wait times turns these fade rates and wait times to question (??) marks. Use CHANGE to replace the ??? with the fade rates and wait times that were in these frames.

This is a print out of the show created on pages 14, 15, 16.

SHOW starts w/Trays at 1

SEQUENCE 1

	fr 1	fade lamps A at 3s rate	wait 4 seconds
	fr 2	START REPEAT	
R=1	fr 2	fade lamps aB at 3s rate TO ADV	wait 5 seconds
R=1	fr 3	fade lamps Ab at"3s"rate "TO ADV"	wait"5"seconds
R=1	fr 4	REPEAT 3 TIMES	
R=2	fr 5	fade lamps aB at 3s rate TO ADV	wait 5 seconds
R=2	fr 6	fade lamps Ab at"3s"rate "TO ADV"	wait"5"seconds
R=3	fr 7	fade lamps aB at 3s rate TO ADV	wait 5 seconds
R=3	fr 8	fade lamps Ab at"3s"rate "TO ADV"	
R=3	fr 9		wait 4 seconds
	fr 10	fade lamps a at 3s rate "TO ADV"	END of SEQ 1

When deleting repeat:

Delete the number of times first, then delete the Start Repeat entry, if the start repeat is deleted first the repeat number of times will become a wait only frame. Delete this frame also.

```
Edit 1 fr 4
                              wait 2 sec
```

Loop Key

Loop makes actions programmed in a series of frames repeat up to 999 times. Projector tray advances do not occur until the last cycle of the loop.

Frames to be looped are placed between a START LOOP frame and a LOOP ? TIMES frame. A START LOOP frame marks the beginning of a loop. A LOOP ? TIMES frame marks the end of the loop.

If the number of loops is not known, leave the ? in LOOP ? TIMES. This causes the loop to run continuously until RUN is pressed. The loop then cycles 1 more time and stops.

LOOP ? TIMES is used in this example.

Erase the Pro Sixteen memory. Press ESCAPE. Press MENU until ACCEPT TO ERASE all SHOWS appears. Press ACCEPT to erase.

Get the Pro Sixteen ready to create.

```
CREATE
```

```
CREATE SEQUENCE 1   Sync Time ??
                          ?:??'??
```

1. Create sequence 1, frame 1. This frame fades lamp 1 on at a 1 second rate, and has a wait time of 3 seconds.

A1 #1	CREATE 1 fr 1 fade lamps at 1s rate
WAIT #3	CREATE 1 fr 1 fade lamps at 3s rate wait 3 sec
ACCEPT	CREATE 1 fr 2

2. Create sequence 1, frame 2. This frame marks the start of a series of frames to be looped. START LOOP is displayed by itself and is the same frame number as the following entry.

LOOP	CREATE 1 fr 2 START LOOP
ACCEPT	CREATE 1 fr 2 L=1

L=1 means that a frame is inside a loop, between the START LOOP and LOOP ? TIMES frames.

3. Create sequence 1, frame 3. This frame dissolves lamp 1 into lamp 2 at the 1 second rate, advances the tray of lamp 1, and uses the wait time of 3 seconds. The tray advance happens in the last cycle of the loop.

A1 A2 #1 TO ADV	CREATE 1 fr 2 fade lamps L=1 at 1s rate TO ADV
WAIT #3 ACCEPT	CREATE 1 fr 2 fade lamps L=1 at 1s rate TO ADV wait 3 sec
A1 A2 WAIT ACCEPT	CREATE 1 fr 3 fade lamps L=1 at"1s"rate "TO ADV" wait"3"sec

4. Create sequence 1, frame 4. This frame marks the end of the loop. LOOP ? TIMES is used. The actions of frame 2 and 3 are to continuously loop until RUN is pressed. This frame has an end sequence instead of a wait time.

LOOP	CREATE 1 fr 4 LOOP ? TIMES

- Use the Number keys to replace the ? in LOOP ? TIMES if the number of loops is known.

END SEQ	CREATE 1 fr 4 LOOP ? TIMES END of SEQ 1
ACCEPT	CREATE SEQUENCE 2 Sync Time ?? ?:??'??

5. Press RESET to return to Sequence 1. Press RUN to run the sequence. Frames 2 and 3 loop continuously.

Press RUN to end the looping. The loop cycle repeats 1 more time, and ends with tray 1 advanced, and lamp 2 on. The Loop ? times will remain in memory.

- While syncing to time code signal, when the Run key is pressed, the Loop ? Times will be changed to a Loop # Times. A number replaces the ? mark.

- There is an exception to the rule of deferring tray advances until the last cycle of the loop. A projector that is on at the start of a loop and then faded off and has a TO ADV in the first frame will make a single advance during the first cycle of the loop.

- Inserting a START LOOP and LOOP ? TIMES into a series of frames having dittoed (" ") fade rates and wait times turns these fade rates and wait times to question (??) marks. Use CHANGE to replace the ??? with the fade rates and wait times that were in these frames.

- To change the loop number times to 4, step to the frame that displays.

CHANGE	Edit 1 fr 5 LOOP ? TIMES END of SEQ 1
◀	CHANGE 1 fr 5 LOOP ? TIMES
#3	CHANGE 1 fr 5 LOOP 3 TIMES

It is wise before inserting or deleting Loop entries (start Loop and Loop # Times) to document the entries.

ACCEPT	Edit 1 SEQUENCE 2 Sync Time ??

Press Backspace to check that the number is now correct.

This is a print out of the show created on pages 17, 18, 19.

SHOW starts w/Trays at 1

SEQUENCE 1

fr 1	fade lamps A at 1s rate	wait 3 seconds
fr 2	START LOOP	
L=1 fr 2	fade lamps aB at 1s rate TO ADV	wait 3 seconds
L=1 fr 3	fade lamps Ab at"1s"rate "TO ADV"	wait"3"seconds
L=1 fr 4	LOOP 3 TIMES	

Fade to Level

FADE TO LEVEL fades lamps to preset levels of brightness. There are 10 levels of brightness, from 1 to 10. Level 1 is 10% of full brightness. Level 10 is full brightness. Fade to level is always a lamp "on" cue. Fading from level 9 to level 3 is not fading off, but fading "on" to level 3.

When programming,if menu #8 is on (2=SPC or 3= +Shutter), the levels are entered in one hundredth steps. Therefore, level 10 is at 10% brightness while 100 is at full brightness. This applies only to special SPC single projector dissolve controls.

Erase the Pro Sixteen memory. Press ESCAPE. Press MENU until ACCEPT TO ERASE all SHOWS appears. Press Accept to erase.

Get the Pro Sixteen ready to create.

CREATE	CREATE SEQUENCE 1 Sync Time ?? ?:??'??

1. Create sequence 1, frame 1, This frame fades lamp 1 to level 3 at a 4 second fade rate. It has a 2 second wait time.

FADE TO LEVEL	CREATE 1 fr 1 FADE to LEVEL ?

A level from 1 to 10 can be entered.

Select level 3.

#3	CREATE 1 fr 1 FADE to LEVEL 3

Select lamp 1 to fade to level 3.

A1	CREATE 1 fr 1 LEVEL 3 lamps

Fade lamp 1 to level 3 at a 4 second rate.

#4	CREATE 1 fr 1 LEVEL 3 lamps at 4s rate

Enter a wait time of 2 seconds.

WAIT #2	CREATE 1 fr 1 LEVEL 3 lamps at 4s rate wait 2 sec
ACCEPT	CREATE 1 fr 2

Lamp 1 fades up at 4 second rate to level 3, 30% of full brightness.

2. Create sequence 2, frame 2. This frame fades lamp 2 to level 6 at the 4 second rate. It has an end sequence instead of a wait time.

FADE TO LEVEL	CREATE 1 fr 2 FADE to LEVEL 3

Level 3 will be used again unless another level is selected.
Select level 6.

#6	CREATE 1 fr 2 FADE to LEVEL 6
A2 END SEQ	CREATE 1 fr 2 LEVEL 6 lamps at"4s"rate END of SEQ 1
ACCEPT	CREATE SEQUENCE 2 Sync Time ?? ?:??'??

Lamp 2 fades up at 4 sec.rate to level 6, 60% of full brightness

3. Create sequence 2, frame 1. This frame fades lamp 1 from level 3 to level 10, full brightness, using a 4 second fade rate. It has an end sequence instead of a wait time.

FADE TO LEVEL	CREATE 2 fr 1 FADE to LEVEL 6
#1 #0	CREATE 2 fr 1 FADE to LEVEL 10
A2 END SEQ	CREATE 2 fr 1 LEVEL 10 lamps at"4s"rate END of SEQ 2
ACCEPT	CREATE SEQUENCE 3 Sync Time ?? ?:??'??

Lamp 1 fades up at 4 second rate to level 10, full brightness.

4. Press RESET to return to sequence 1. Press RUN to run sequence 1. Press RUN to run sequence 2.

A lamp fade to level and a lamp on/off to other projectors cannot be programmed in the same frame. Each must be in a separate frame with a wait time of .05 seconds or more.

This is a print out of the show created on pages 20, 21.

SHOW starts w/Trays at 1

```
SEQUENCE 1
    fr 1        LEVEL 3 lamps  A
                  at 4s rate                    wait 2 seconds
    fr 2        LEVEL 6 lamps  B
                  at"4s"rate                    END of SEQ 1
SEQUENCE 2
    fr 1        LEVEL 10 lamps  B
                  at"4s"rate                    END of SEQ 2
```

Stop/Continue Fading

Stop/Continue fading is another version of the Fade to Level cue. Where Fade to Level is predictable and precise, Stop/Continue fading is usually a hit and miss as to what level of brightness the fading will stop. This is sometimes called a FREEZE effect.

Stop/Continue fading is dependent on both the fade rate and the wait time which precedes the Stop/Continue cue. This affects lamps fading on or off.

To enter Stop/Continue fading:

1. While in Create or Insert, enter a frame by pressing Lamp key, Fade Rate, Wait Time, Accept.

2. [FADE LEVEL]

[.] Decimal

The first time a STOP/CONT FADING is entered it is a Stop Fade.

3. Enter projector lamps that are to stop fading. The▲up LED will light when stopping or continuing a lamp fade. It does not indicate the direction of fade.

4. Enter rate, wait, and accept.

When played the lamps will fade at programmed rate, and after the wait has timed out, the lamps will stop fading.

After programming a Stop/Fade, there are two choices; (1) to continue to fade in the same direction, or (2) to reverse the direction of the fading.

(1) To continue fading in the same direction, press the Fade to Level key, then the Decimal key, and Accept. This time the entry will be a Continue to Fade although the display shows Stop/Continue Fading. Next enter the projector lamp that is to continue to fade in the same direction.

(2) To reverse the direction of the fading, it is not necessary to press the Fade to Level key. Just enter the Lamp cue for the projector that has stopped fading and the fade direction will be reversed. The up▲down▼LEDs will indicate final direction of fade.

Start Flash - Stop Flash Keys

Start flash key assigns flash ratios to individual lamps. A flash ratio sets the duration that a lamp is on and off. Flash ratios are measured in tenths of a second, and entered using Number keys 0 through 9 (0 is .05 second).

Start Flash does not turn lamps on or off, it only sets up the flash ratio. When the lamps assigned a flash ratio are turned on, flashing will become visible.

Flashing continues until it is stopped. Projectors can be faded off, advanced, and faded back on while flashing.

Stop flash key discontinues the flashing action, it does not turn lamps on or off.

Use a start flash for animations. Animations can be run and maintained while the other projectors in a presentation continue to normally fade on, fade off, and advance.

A two projector animation is created in this example.

Erase the Pro Sixteen memory. Press Escape. Press Menu until ACCEPT TO ERASE all SHOWS appears. Press Accept to erase.

Get the Pro Sixteen ready to create.

CREATE	CREATE SEQUENCE 1 Sync Time ?? ?:??'??

1. Create sequence 1, frame 1. This frame sets up a 2:2 flash ratio (on for 0.20 second, off for 0.20 second) for lamp 1. This frame has a 0.20 second wait time.

START FLASH	CREATE 1 fr 1 FLASH (ON:OFF) 0:0

This 0:0 flash ratio is on for .05 sec., then off for .05 sec.

Enter the 2:2 flash ratio.

#2 #2	CREATE 1 fr 1 FLASH (ON:OFF) 2:2

Assign the flash ratio to lamp 1.

A1	CREATE 1 fr 1 FLASH 2:2 lamps

This does not turn on A1, it presets the flash to A1.

Enter a 0.20 second wait time.

WAIT #. #2	CREATE 1 fr 1 FLASH 2:2 lamps wait 0.20 sec
ACCEPT	CREATE 1 fr 2

2. Create sequence 1, frame 2. This frame assigns the 2:2 flash ratio to lamp 2, and uses the 0.20 second wait time.

START FLASH	CREATE 1 fr 2 FLASH (ON:OFF) 2:2

This flash ratio is restated in the display saving entry time.

Assign this flash ratio to lamp 2 and enter the 0.20 second wait time.

A2 WAIT	CREATE 1 fr 2 FLASH 2:2 lamps wait"0.20"sec
ACCEPT	CREATE 1 fr 3

3. Create sequence 1, frame 3. This frame fades lamps 1 and 2 on at a 4 second rate and ends this sequence.

A1 A2	CREATE 1 fr 3 fade lamps
#4 END SEQ	CREATE 1 fr 3 fade lamps at 4s rate END of SEQ 1
ACCEPT	CREATE SEQUENCE 2 Sync Time ?? ?:??'??

Lamps 1 and 2 fade on and flash alternately since the flash was started at different times (in different frames).

4. Press Reset to return to Sequence 1. Press Run to run sequence 1. Lamps 1 and 2 now fade on animating.

Both lamps have the same 2:2 flash ratio but are never on at the same time. Lamp 2 flashes on for 0.20 second as lamp 1 flashes off for 0.20 second; lamp 2 flashes off for 0.20 second as lamp 1 flashes on for 0.20 second. This alternation is caused by the frame 1 wait time, which delays the start of the 2:2 flash ratio for lamp 2 by 0.20 second.

5. Create sequence 2, frame 1. Stop flash in this frame clears the flash ratio for lamp 2. This frame has an end sequence instead of wait time.

CREATE	CREATE SEQUENCE 2 Sync Time ?? ?:??'??
STOP FLASH	CREATE 2 fr 1 STOP FLASH lamps

This frame clears a flash ratio for a lamp or lamps.

Clear the lamp 2 flash ratio.

A2	CREATE 2 fr 1 STOP FLASH lamps
END SEQ	CREATE 2 fr 1 STOP FLASH lamps END of SEQ 2
ACCEPT	CREATE SEQUENCE 3 Sync Time ?? ?:??'??

Lamp 2 stops flashing. Lamp 1 continues flashing. Both lamps remain on.

6. Press Reset to return to sequence 1. Press Run to run sequence 2. Press Run to run sequence 2.

CREATING 2 PROJECTOR ANIMATIONS:

Begin by assigning flash ratios:
Frame 1: 1:1 flash ratio for lamp 1, wait 0.10 second.
Frame 2: 1:1 flash ratio for lamp 2, any wait time or an end sequence.
Frame 3: Normally fades these lamps on.

To slow the animation multiply the 1:1 flash ratios and the 0.10 second wait time of frame 1 by 2, 3, 4, 5, 6, 7, 8, or 9. The higher the number the slower the animations.

For example, multiply by 9 for the slowest animation:
Frame 1: 9:9 flash ratio for lamp 2, wait 0.90 second.
Frame 2: 9:9 flash ratio for lamp 2, any wait time or an end sequence.
Frame 3: Normally fades lamps 1 and 2 on.

CREATING 3 PROJECTOR ANIMATIONS

Begin by assigning flash ratios:
Frame 1: 1:2 flash ratio for lamp 1, wait 0.10 seconds
Frame 2: 1:2 flash ratio for lamp 2, wait 0.10 seconds
Frame 3: 1:2 flash ratio for lamp 3, any wait time or an end sequence
Frame 4: Normally fades these lamps on.

To slow the animation, multiply the 1:2 flash ratios and the 0.10 second wait times by 2, 3, and 4.

CREATING 4 PROJECTOR ANIMATIONS

Begin by assigning flash ratios:
Frame 1: 1:3 flash ratio for lamp 1, wait 0.10 second
Frame 2: 1:3 flash ratio for lamp 2, wait 0.10 second
Frame 3: 1:3 flash ratio for lamp 3, wait 0.10 second
Frame 4: 1:3 flash ratio for lamp 4, any wait time or an End of Sequence
Frame 5: Normally fades these lamps on.

To slow the animation, multiply the 1:3 flash ratios and 0.10 second wait times by 2 or 3.

This is a print out of the show created on pages 23, 24, 25.

SHOW starts w/Trays at 1.

SEQUENCE 1
fr 1 FLASH 2:2 lamps A — wait 0.20 seconds
fr 2 FLASH 2:2 lamps B — wait"0.20"seconds
fr 3 fade lamps AB at 4s rate — END of SEQ 1
SEQUENCE 2
fr 1 STOP FLASH lamps b — END of SEQ 2

Auxiliary Key

Auxiliary is programmed to control an external relay by closing and opening its contacts which provides on/off switching for tape recorders, power controls and other auxiliary devices.

The Pro Sixteen controls 12 auxiliaries using Projector keys 1, 2, and 3 on each of the 4 banks.

Erase the Pro Sixteen memory. Press Escape. Press Menu until ACCEPT TO ERASE all SHOWS appears. Press the Accept key.

Get the Pro Sixteen ready to create.

CREATE	CREATE SEQUENCE 1 Sync Time ?? ?:??'??

1. Create sequence 1, frame 2. This frame turns auxiliary A 1 on, or has a 0.5 second wait time. Auxiliaries are turned on and off. Auxiliary frames have no fade rates.

AUXILIARY	CREATE 1 fr 1 AUXILIARY

This frame turns on an auxiliary.

Turn on auxiliary 1.

A1	CREATE 1 fr 1 AUXILIARY

Enter a wait time of 0.5 seconds.

WAIT #. #5	CREATE 1 fr 1 AUXILIARY wait 0.50 sec
ACCEPT	CREATE 1 fr 2

A click is heard as the contacts on the A 1 auxiliary relay close.

2. Create sequence 1, frame 2. This frame turns off auxiliary A 1 and has an end sequence instead of a wait time.

AUXILIARY	CREATE 1 fr 2 AUXILIARY
A1 END SEQ	CREATE 1 fr 2 AUXILIARY END of SEQ 1
ACCEPT	CREATE SEQUENCE 2 Sync Time ?? ?:??'??

A click will be heard as the contacts on the A 1 auxiliary relay open. This 2 frame sequence produces a momentary (0.5 second) closure of the contacts of the Arion Auxiliary Control.

3. Create sequence 2, frame 1. Turn on auxiliary A 2 in this frame. Enter an end sequence instead of a wait time, making this a single frame sequence.

AUXILIARY A2	CREATE 2 fr 1 AUXILIARY
END SEQ	CREATE 2 fr 1 AUXILIARY END of SEQ 2
ACCEPT	CREATE SEQUENCE 3 Sync Time ?? ?:??'??

A click will be heard as the contacts on the A 2 auxiliary relay close. This sequence produces a latching closure of the relay contacts. These contacts remain closed until another frame opens them.

4. Press Reset to return to sequence 1. Press the Run key to run sequence 1. Press the Run key to run sequence 2.

This is a print out of the show created on pages 26, 27.

SHOW starts w/Trays at 1

SEQUENCE 1
fr 1 AUXILIARY A
wait 0.50 seconds
fr 2 AUXILIARY a
END of SEQ 1

SEQUENCE 2
fr 1 AUXILIARY B
END of SEQ 2

Forward and Reverse Keys

When using the Arion single projector control SPC, the SPC enhanced command forward projector trays without turning lamps off is available. Reverse backs up projector trays without turning lamps off. During either of these commands, lamps that are on remain on and lamps that are off stay off.

When using standard dissolve control the Forward and Reverse keys will turn the lamps off/on at a hard cut.

Forward and reverse are programmed alike. In this example trays are forwarded (advanced).

Erase the Pro Sixteen memory. Press Escape. Press Menu until ACCEPT TO ERASE all SHOWS appears. Press Accept to erase.

Get the Pro Sixteen ready to create.

CREATE	CREATE SEQUENCE 1 Sync Time ?? ?:??'??

1. Create sequence 1, frame 1. This frame forwards tray A1. It has an end sequence instead of a wait time, making this a 1 frame sequence.

FORWARD	CREATE 1 fr 1 FORWARD Trays

A tray is to forward in this frame.

Select tray 1 to forward.

A1	CREATE 1 fr 1 FORWARD Trays

A tray is forwarded in this frame.

END SEQ	CREATE 1 fr 1 FORWARD Trays END of SEQ 1
ACCEPT	CREATE SEQUENCE 2 Sync Time ?? ?:??'??

The A1 tray forwards 1 tray position.

- Use forward with a repeat when trays are to forward many tray positions.

2. Create sequence 2, frame 1. This frame marks the beginning of a repeat that forwards the A2 tray 20 tray positions.

REPEAT	CREATE 2 fr 1 START REPEAT
ACCEPT	CREATE 2 fr 1 R=1

3. Create sequence 2, frame 2. This frame forwards tray A2, and has a 0 second wait time.

FORWARD A2	CREATE 2 fr 1 FORWARD Trays R=1
WAIT #0	CREATE 2 fr 1 FORWARD Trays R=1 wait 0 sec
ACCEPT	CREATE 2 fr 2 R=1

4. Create sequence 2, frame 3. This frame marks the end of the repeat, and sets the number of times frame 2 is repeated. It has an end sequence instead of a wait time.

REPEAT	CREATE 2 fr 2 REPEAT ? TIMES

Enter the number of repeats.

#2 #0 END SEQ	CREATE 2 fr 2 REPEAT 20 TIMES END of SEQ 2
ACCEPT	CREATE SEQUENCE 3 Sync Time ?? ?:??'??

Tray 2 forwards 20 tray positions. Press Tray key. Display shows A2 now at tray position 21.

5. Press Reset to return to Sequence 1. Press Run to run sequence 1. Press Run to run sequence 2.

This is a print out of the show created on pages 28, 29.

SHOW starts w/Trays at 1

SEQUENCE 1
fr 1 FORWARD Trays A
END of SEQ 1

SEQUENCE 2
fr 1 START REPEAT
R=1 fr 1 FORWARD Trays B
wait 0 seconds
R=1 fr 2 REPEAT 20 TIMES
R=2 fr 3 FORWARD Trays B
wait 0 seconds
R=3 fr 4 FORWARD Trays B
wait 0 seconds
R=4 fr 5 FORWARD Trays B
wait 0 seconds
R=5 fr 6 FORWARD Trays B
wait 0 seconds
R=6 fr 7 FORWARD Trays B
wait 0 seconds
R=7 fr 8 FORWARD Trays B
wait 0 seconds

R=8 fr 9 FORWARD Trays B	wait 0 seconds
R=9 fr 10 FORWARD Trays B	wait 0 seconds
R=10 fr 11 FORWARD Trays B	wait 0 seconds
R=11 fr 12 FORWARD Trays B	wait 0 seconds
R=12 fr 13 FORWARD Trays B	wait 0 seconds
R=13 fr 14 FORWARD Trays B	wait 0 seconds
R=14 fr 15 FORWARD Trays B	wait 0 seconds
R=15 fr 16 FORWARD Trays B	wait 0 seconds
R=16 fr 17 FORWARD Trays B	wait 0 seconds
R=17 fr 18 FORWARD Trays B	wait 0 seconds
R=18 fr 19 FORWARD Trays B	wait 0 seconds
R=19 fr 20 FORWARD Trays B	wait 0 seconds
R=20 fr 21 FORWARD Trays B	wait 0 seconds
R=20 fr 22	END of SEQ 2

Tray Key

While in either the Edit or Create modes, press the Tray key, the display reads:

TRAY

```
TRAY:
                A1:3  A2:5  A3:2  A4:6
```

Display shows the tray positions of the four projectors on the A bank. Pressing the Tray key again, will change the display to read the B bank. Press again to see a different bank in the display.

TRAY

```
TRAY:
                B1:2  B2:4  B3:1  B4:4
```

While in the Tray mode, the Forward and Reverse keys can be pressed for manual operation to view the next or previous slides.

When the Forward or Reverse key is pressed, the display reads:

FORWARD

```
TRAY  A2  B1  C1  D1  E1  F1  G1  H1  I1
FORWARD   J1  K1  L1  M1  N1  O1  P1
```

The first four projectors are in the A bank, the next four in the B bank (ex. B1, B2) etc. This gives the positions of all of the trays in one display. Pressing the projector keys will cycle the trays.

A B C D = Bank A1, 2, 3, 4
E F G H = Bank B1, 2, 3, 4
I J K L = Bank C1, 2, 3, 4
M N O P = Bank D1, 2, 3, 4

Copy/Swap Key

Copy moves a show program from one bank to another.

In this example, a single frame show program is created on bank A and moved to bank D.

Clear the Pro Sixteen memory. Press Escape. Press Menu until ACCEPT to ERASE all SHOWS appears. Press Accept to erase.

Get the Pro Sixteen ready to create.

CREATE

```
CREATE SEQUENCE 1    Sync Time ??
                          ?:??'??
```

1. Create sequence 1, frame 1. This frame fades lamp 1 on at a 2 sec. rate, and has an end sequence instead of a wait time.

A1 #2 END SEQ

```
CREATE 1 fr 1          fade lamps
 at 2s rate          END of SEQ 1
```

ACCEPT

```
CREATE SEQUENCE 2    Sync Time ??
                          ?:??'??
```

2. Get the Pro Sixteen ready to copy.

COPY

```
SWAP BANK
```

Move the program from bank A to D. If an error in entry is made, press the Copy key again to clear the display.

A1 D1 ACCEPT

```
SWAP BANK
 A & D
```

When Accept is pressed, the banks will swap and the lower line of the display is cleared.

CREATE

```
CREATE SEQUENCE 2    Sync Time ??
                          ?:??'??
```

- SWAPPING appears in the message window when a long show program is being moved.

3. Press Reset to return to sequence 1. Press Run and the show program plays back on bank D.

Use set-up to turn on and off individual projector lamps for focusing and alignment.

The Set-up key can be used at any time while in both the Create and Edit mode. This is useful if it is necessary to view what slides are in the various projectors.

Set-up now has two options: what lamps are to be on and position of the trays. Since the alignment and focus slides are often in tray position 80, it is simple to have all trays cycle to this position for set-up.

SETUP	SET-UP lamps w/Trays at ??

Pressing any projector Lamp key is now enabled.

To have trays cycle to a position other than 1: Press the Number keys to designate tray position.

8	0	ACCEPT	SET-UP lamps w/Trays at ?? 80

Trays will cycle to this position when Accept key is pressed.

SET-UP lamps w/Trays at 80

This is only a set-up function and is not entered into the memory. Once any key is pressed to move out of this mode, the set-up will default to current lamp and tray positions.

If Set-up key was pressed while in Create, to return, press Create key.

For other operations of the Set-up key, see pages 66-67.

Show Size and Memory Available

Show size is the number of memory blocks used for the show program. When more than one show is in the programmer, this show size is for the show number displayed. Memory available is the grand total of remaining unused blocks, not for each show.

The Pro Sixteen has 126 memory blocks. Each memory block holds 120 steps, this is over 15,000 steps.

1. To see the show size press the Escape key, then press the Menu key twice.

MENU	MENU	MENU #2 Show 0 Size is: 0 Block(s) Memory Available is: 126 Block(s)

When there is no show program in memory. All memory blocks are available.

To escape the show size/memory menu, press Escape or Reset.

Menus of Pro Sixteen Programmer

To display the menus, press the Escape key, then press Menu key. Pressing Menu key repeatedly will step through all of the menus.

```
MENU #1
 PRO SIXTEEN          Version 2.34   (XXXX)
```

```
MENU #2     SHOW Size 0 is:   0 block(s)
      Memory Available is: 126 block(s)
```

Press Menu key. Either press Number key or use Step and Backspace keys to display menus.

```
MENU #3                    Generate time code:
 (1=SMPTE 30 fr)    2=EBU 25fr
```

```
MENU #4
 ACCEPT to Generate SMPTE time code
```

( ) indicates selected mode. (1) if Accept key is pressed, displays:

If EBU is selected, all displays will show EBU in place of SMPTE.

If starting time is other than Enter time, press Accept key.

```
Generate SMPTE time code 0:00'00
 starting at (HH:MM'ss) ?:??'??
```

If starting time is 0:00'00 press Accept key.

```
Generate SMPTE time code  0:00'00
 ACCEPT to START
```

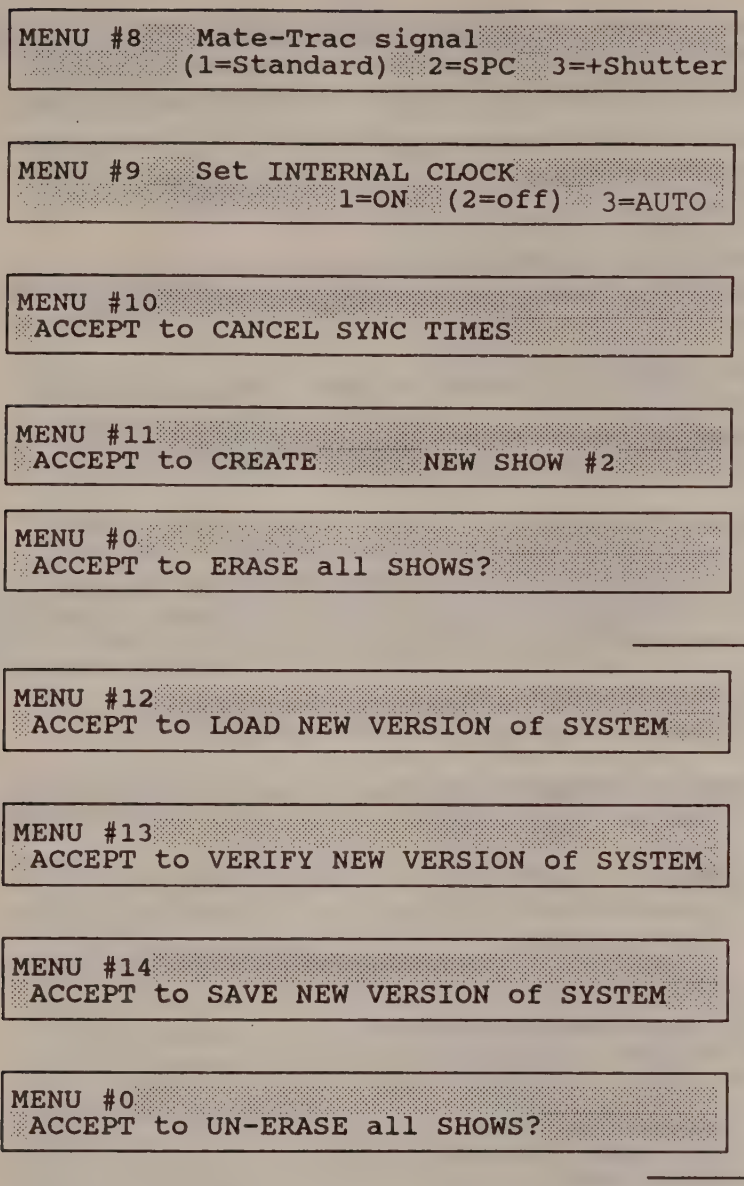
```
Generating SMPTE time code  0:00'30
```

```
MENU #5                Set Printer BAUD RATE
1=300   (2=1200)   3=2400   4=9600   5=19200
```

```
MENU #6                RS-232/Port
            1=Printer (2=Computer)
```

When power is off, mode will not default.

```
MENU #7                  Time Display:
        (1=1/100s)     2=25fr/s    3=30fr/s
```



Select number then press Accept key. This mode does not default.

This mode defaults to (2=OFF) when power is off except for (3=AUTO).

Pressing the Accept key will erase the entire show.

These menus appear when no show is in memory.

Storing the Show Program on Tape

A show program stored on tape is called a show program memory dump. Once a show program memory dump is made, the show program in the Pro Sixteen can be erased. When needed again, the show program stored on tape can be loaded back into the Pro Sixteen.

The data that is recorded is of a short duration. It is not a Mate-Trac signal. It is compared to saving on a computer disk.

SAVE sends the show program to tape. VERIFY compares the show program memory dump on tape with the show program still in memory. This ensures that the show program was correctly saved.

TAPE RECORDER SETUP FOR SAVING. Fully rewind the tape. Connect a shielded audio cable from either of the Sync OUTs on the Pro Sixteen to the tape recorder sync line IN. Get the tape recorder ready to record. Set the record level to between -3 and 0 Vu.

1. Get the Pro Sixteen ready to save the show:

SAVE

```
SAVE SHOW 1          1 block(s)
 ACCEPT to START
```

NOTE: If display reads: - R232/SAVE SHOW, it is necessary to go to Menu #6 and Select (2=Computer).

2. Start the tape recorder and begin recording. Let a few inches of tape pass the record head.

Make a show program memory dump.

ACCEPT

```
SAVING SHOW          1 block(s)
```

This show program is recorded on tape in less than 2 seconds. During saving, the message window counts up as each block (128 steps) of a show program memory is sent out.

When saving is completed.

```
SHOW 1 starts w/Trays at 1
```

Make a second show program memory dump.

Press Escape, Save and then Accept to make another show program dumps. This is a protection against accidental erasure and tape damage.

SAVE

```
SAVE SHOW 1          1 block(s)
 ACCEPT to START
```

ACCEPT

When saving is completed.

```
SHOW 1 starts w/Trays at 1
```

Stop the tape recorder.

TAPE RECORDER SETUP FOR VERIFYING. Fully rewind the tape. Connect another shielded audio cable from tape recorder sync line OUT to the IN on the Pro Sixteen.

3. Get the Pro Sixteen ready to verify.

VERIFY	VERIFY SHOW 1

Playback the tape. Adjust the tape recorder sync output until the normal signal indicator on the Pro Sixteen lights.

VERIFYING SHOW 1 block(s)

Now compare the show program memory dump on tape with the show program in memory.

SEQUENCE 1

Show verified.

The show program memory dump will be verified in less than 2 seconds. During verifying each block of the show program from tape is displayed.

- REVERIFY SHOW means that the memory dump did not accurately compare with the show program. If display continues to read Verify Show, it means that no memory dump from tape was found. Check audio cables, tape recorder output levels, also make sure the tape is rewound to the start of the memory dumps. Press VERIFY and play tape once more. If unable to verify for the second time, repeat the same procedure.

Loading the Show Program From Tape to the Pro Sixteen

Load accepts the show program memory dump from tape into Pro Sixteen. When loading more than one show into the memory, see Next Show key on page 59.

TAPE RECORDER SETUP FOR LOADING. Fully rewind the tape. Connect a shielded audio cable between the tape recorder sync line OUT and the IN on the Pro Sixteen.

1. Get the Pro Sixteen ready to load.

LOAD	LOAD SHOW 1

2. Play the tape. Adjust the tape recorder sync output until the normal signal indicator on the Pro Sixteen lights.

LOADING SHOW 1 block(s)

Loading is completed when this display appears.

SEQUENCE 1

The show program from tape will be loaded in less than 2 seconds. As the show program is loaded, each block of the show program will appear in the display.

- RE-LOAD means the show program was not accurately loaded into memory. If display continues to read LOAD SHOW, no show program memory dump from tape was found. Check audio cable connections, tape recorder sync channel output level, and make sure the tape is rewound to the start of the memory dump. Press LOAD and try again. If unable to load a second time, try loading from the second memory dump.

NOTE: Mate-Trac signal cannot be loaded into the programmer, it must be a Save Show recording. Be sure that menu #6 RS-232/Port is in the (2=Computer) position.

How to Use Time Code Programming

The Purpose of Time Code is two fold, first it enables synchronizing sequences to the audio track of the show tape more precisely and secondly it allows editing of the program without re-recording the show tape.

First procedure after the master audio tape has been recorded is to lay down (record) the Time Code on one of the tracks of the master tape. From this master all show tape copies will be generated. Since shows can be played back in two ways: using Time Code or using Mate-Trac signal, hook-up varies.

A show tape using Time Code signal requires that the Pro Sixteen be connected in the system. As the programmer receives the time code signal from the show tape, the sequences will be executed when the time assigned to the sequence number is encountered. This is a sequence's Sync Time.

A show tape playing Mate-Trac signal does not require the Pro Sixteen Programmer. The Mate-Trac signal is sent directly to the dissolve controls.

Why Time Code

Since Time Code is standard in the video and motion picture industry, it is also becoming very popular in the audio recording field. Therefore, it is a great advantage to synchronize multi-image to both the audio and video productions using this time code. Now video tape can be used as the master track for multi-image presentations mixing both motion and slides.

Types of Time Code

There are two types of Time Code that the Pro Sixteen generates and receives. The two are (1) standard 30 frames per second (SMPTE) and (2) (EBU) 25 frames per second. 30 frames per second is more standard in U.S. video whereas the 25 frames (EBU) is an European standard.

The Pro Sixteen has in its Menu #3 the choice of two Time Codes.

```
MENU #3                    Generate time code:
 (1=SMPTE 30fr)                  2=EBU 25fr
```

Be sure to set this menu to (1=SMPTE) or (2=EBU) to correspond to the type of time code played from the show tape. When playing tape time code sync signal, the setting will be displayed.

```
SEQUENCE 10                SMPTE   0:02'21
SEQUENCE 10                EBU     0:02'21
```

NOTE: Menu #3 is in (1=SMPTE), when playing EBU time code, there is no time readout appears in the display, menu #3 must be in (2=EBU). When menu #3 is in the (2=EBU) mode, playing SMPTE time will cause the display to read EBU 0:02'21 momentarily and then switch to SMPTE automatically.

Which Type to Use?

If mixing video and multi-image, the 30 frame (SMPTE) is used in the U.S. or any location that 30 frames is a video standard.

If not using video or not playing both SMPTE and Mate-Trac signals into the Pro Sixteen, the EBU type of signal is sometimes preferred as it is a more reliable signal when using fast duplication of tapes. When generating or receiving the EBU time code, the menu #3 must be in (2=EBU).

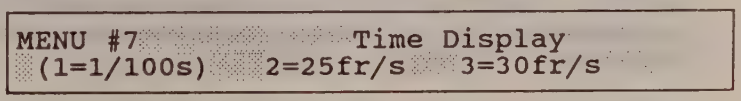
If both SMPTE time code and Mate-Trac signal are to be played into the Pro Sixteen, it is necessary to use 30 frames (1=SMPTE) time code.

Menu #3 Generate time code must be set to (1=SMPTE) when playing SMPTE or Mate-Trac sync signals and set to (2=EBU) when playing EBU sync signal.

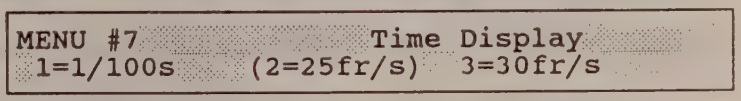
Selecting the Time Display

All Pro Sixteens are preset at the factory to display the time in hundredths of a second when in Edit or Create mode. Whether SMPTE 30 frames or EBU 25 frames is played into the Pro Sixteen, the display will read in seconds.

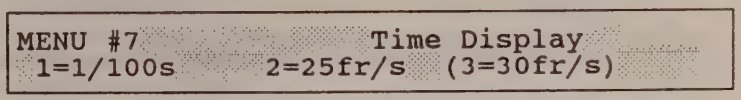
To change the time displayed from one hundredths of a second to either 30 frames or 25 frames (EBU) it is necessary to go to menu #7.



Press #2 the display will readout in 25 frames.



Press #3 the display will readout in 30 frames.



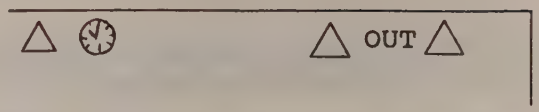
NOTE: the time display mode has no effect on what signal the Pro Sixteen will generate or receive. This is determined by the selection in menu #3.

or

When in the edit mode, the display will show an "f" after the last number to indicate the 30 frame per second readout and an "e" after the last number to indicate the 25 frame per second readout. The letters f or e do not appear when in playback.

Selecting the Right Outputs

There are 3 output and 1 input jacks located on the rear of the Pro Sixteen.



Two are sync outputs and one is a time code output. These outputs are automatically switched on/off and send out different signals depending on the programmer mode. There is one IN jack that receives either time code or Mate-Trac signals.

- Recording SMPTE/EBU Time Code - The two sync outputs are disabled and the time code is available at the Time Code output jack only.
- Playing (receiving) SMPTE/EBU Time Code from tape - only the two sync outputs send out Mate-Trac signal.
- Recording Mate-Trac signal while receiving SMPTE/EBU Time Code - connect either sync output to the recorder input.
- Playing Mate-Trac in - The time code output is disabled and Mate-Trac in signal is bypassed to the two sync outputs. **NOTE:** Menu #3 Generate time code, must be in the (1=SMPTE) position.
- SMPTE and EBU interfacing--Time Code can be sent to computer, recorder, etc. via the time code output jack whenever the Run key is pressed.

Choosing Time Code for Playback of Show

```
MENU #3                    Generate time code:
(1=SMPTE 30fr)                  2=EBU 25fr
```

CHOICE 1 - **SMPTE** When in this mode both SMPTE Time Code and Mate-Trac signal will be received by the Pro Sixteen. Mate-Trac signal will by-pass to the output of the programmer. EBU time code will be ignored.

CHOICE 2 - **EBU** When in this mode Mate-Trac signal is ignored.

When playing EBU Time Code, EBU will appear ahead of the displayed time code.

```
SEQUENCE 10                EBU   0:02'21
```

When playing SMPTE Time Code, EBU will appear momentarily, then will display SMPTE.

```
SEQUENCE 10                SMPTE 0:02'21
```

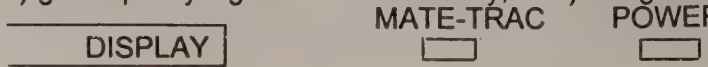
REMEMBER: Mate-Trac by-passes through the Pro Sixteen only when in (1=SMPTE).

```
PLAYING SEQUENCE 10
```

EBU signal is received only when in (2=EBU). SMPTE will be received when in either (1=SMPTE) or (2=EBU).

Mate-Trac Sync (Time Code) Signal Indicator

When receiving a time code (SMPTE, EBU), or Mate-Trac signal, the sync signal indicator indicates: 1) good quality signal when lit steadily, or 2) marginal signal if LED flickers.



2. When no signal is received, the LED indicates that Mate-Trac sync signal is generated at the sync outputs.

3. When in the SMPTE generate mode, the LED will pulse at a regular rate. Time code signal is generated at the time code output.

Generating Time Code Signal

Turn power to the programmer "on". Press menu key until Menu #3 appears. Choose either 1 or 2 and accept. Choose 1(SMPTE), display will read:

If 2(EBU) was chosen display will read EBU.

```
MENU #4
 ACCEPT to Generate SMPTE Time Code
```

ACCEPT

```
Generate SMPTE Time Code      0:00'00
 Starting at (HH:MM'ss)      ?:??'??s
```

- If time is to start at zero,

ACCEPT

```
Generate SMPTE Time Code      0:00'00
 ACCEPT to START
```

- If time is to start at other than zero time, press the # keys:

1 2 3 5

```
Generate SMPTE Time Code      0:12'35
 ACCEPT to START
```

ACCEPT

When recording SMPTE or EBU time code on the Master Audio tape, use time code out jack, start tape in record sync, wait until tape is well past the leader, then press the Accept key to start time code generation.

IMPORTANT: Plan your audio tape to have about 15 seconds of Time Code signal before the time of the first sequence. This provides a test playback section and allows for the addition of sequences that may be needed before the start of a completed show.

To Pause the generating of the SMPTE or EBU time code - press the Backspace key ◄, the display will freeze at that time.

To continue generating SMPTE or EBU time code, press the Accept key. A remote control will also start and stop the generation of the time code.

After recording the SMPTE or EBU time code on the sync track, connect the tape player to the in jack at the right rear panel, and play the sync track into the programmer to verify that the recording was successful.

If no show is in the programmer when playing the SMPTE or EBU time code, the display will read:

```
END of SHOW          SMPTE      0:01'32
```

NOTE: When SMPTE or EBU time code is being generated by the ro Sixteen, the green Mate-Trac LED will pulse continuously.

Synchronizing Sequences to Time Code

There are three methods of assigning a Time to each sequence. (A) after the presentation has been created, (B) while creating, or (C) before creating the presentation. IMPORTANT: It is good practice to have at least 10 seconds of do nothing time code on the audio tape before the execution of the first sequence.

A. SYNCING AFTER CREATING A PRESENTATION.

1. First the time code is recorded onto the sync track of the audio tape.

2. Show is entered into the programmer.

3. When show is finalized, play the audio tape feeding the time code from the sync track into the programmer.

Display reads:

```
Sync SEQUENCE 1      SMPTE      0:00'12
```

If(2=EBU)was selected, display will read EBU.

4. Every time a sequence is to be executed, the Run key is pressed. This will store the Sync Time for each sequence.

NOTE: If there are LIVE CUES in the programmer, stop tape at the LIVE CUE, press Run key for all LIVE CUES, then continue playing tape and syncing to the time code.

Example A. After syncing a few sequences, Reset, press the next sequence key; the display will read:

```
Edit SEQUENCE 1              0:00'10.14
Edit SEQUENCE 2              0:02'33.27
Edit SEQUENCE 3      Sync Time ??
```

-indicates that sequence 3 has not been synced.

B. ENTERING SEQUENCE SYNC TIMES WHILE CREATING A PRESENTATION.

1. When creating the show, a time can be entered for each sequence. Use this method only if audio tape has been previously timed out for each sequence.

Example B. Creating a show and sync times. At the beginning of each sequence, a Sync Time is entered in place of the ??? question marks. Press the # keys:

1 0 ACCEPT	CREATE SEQUENCE 1 Sync Time ?? 0:00'10
2 3 3 ACCEPT	CREATE SEQUENCE 2 Sync Time ?? 0:02'33
4 4 0 ACCEPT	CREATE SEQUENCE 3 Sync Time ?? 0:04'40

C. SYNCING TO TIME CODE BEFORE CREATING A PRESENTATION.

The result is sequences with sync times only, since no frames have been entered into the programmer.

1. Time code is recorded on the sync track of the show tape.
2. Before a show has been entered into the programmer:

CREATE	CREATE SEQUENCE 1 Sync Time ?? ?:??'??

3. When playing time code from sync track of the show tape the display will change from create to Sync SEQUENCE.

   The Run key is pressed for every sequence to be executed. This stores a Sync Time for each sequence.

RUN	Sync SEQUENCE 1 SMPTE 0:00'01

If there was an interruption during this sync method, to start up again:

1. Rewind the tape a short distance.
2. Play time code from tape. Sequences with sync times will execute.
3. When Sync SEQUENCE appears in the display, press the Run key to continue syncing more sequences. When in the Edit mode, the time displayed in the lower left is the total time of the previous sequence. This is called gap time.
4. Once sequences have sync times, frames can now be entered into each sequence with the use of the Insert key. Go to the following sequence before pressing Insert key. Example: Go to Edit Seq 5 if sequence 4 is to be programmed.

Go To	#5	ACCEPT	Edit SEQUENCE 5
INSERT			INSERT 4 fr 1

NOTE: The Insert has placed the entry into the previous sequence.

Editing Sync Times

There are two methods of editing the sequence Sync Times.

1. FIRST METHOD IS TO RESYNC TO THE TIME CODE FROM TAPE:

Locate in the memory the sequence Sync Time that is to be changed.

```
Edit SEQUENCE 2                    0:02'32
```

CHANGE

```
CHANGE SEQUENCE 2                  0:02'32
                                   ?:??'??
```

ACCEPT

```
Edit SEQUENCE 2        Sync Time ??
```

Sync Time ?? will now appear in the upper right of the display replacing the previous time. Play the show tape with time code.

RUN

```
Sync SEQUENCE 2        SMPTE       0:02'33
```

2. SECOND METHOD IS TO ENTER DIFFERENT SYNC TIMES:

Locate in the memory the sequence Sync Time that is to be changed.

CHANGE

```
CHANGE SEQUENCE 2                  0:02'32
                                   ?:??'??
```

Enter a new sync time. Press # keys:

2 3 3 . 1

```
CHANGE SEQUENCE 2                  0:02'32
                                   2'33.10
```

ACCEPT

```
Edit SEQUENCE 2                    0:02'33.10
```

After a part of the show has been synchronized, when replaying the tape, the show will play the synchronized sequences, then the display will read:

```
Sync SEQUENCE 3        SMPTE       0:02'36
```

This enables the continuation of syncing the remaining sequences of the show.

If a LIVE CUE sequence appears in the display while synchronizing, stop the tape, execute the LIVE CUES by pressing the Run key, restart playing the tape and continue to sync the following sequences.

Gap Time

"Gap" means the amount of time from the execution of the last frame of a sequence until the time the next sequence sync time.

The time displayed in the lower left corner when in the Edit mode, represents the "gap" time of the previous sequence.

Example: - Seq 4 will execute at 0:00'05.50.

Frame 1 has a 1 sec wait, frame 2 a 4 sec wait, frame 3 a 1.5 sec wait and frame 4 is the end of the sequence.

- Seq 5 will execute at 0:00'19.52.

In this example the last frame (4) of sequence 4 would execute after 05.50 + 1 + 4 + 1.5 = 12 sec. Sequence 5 is to execute at 0:00'14.52, therefore the gap time which is the difference between Sequence 5 sync time and the time that the last frame of Sequence 4 is to execute, (14.52 minus 12) 2.52 seconds.

```
Edit SEQUENCE 5                    0:00'14.52
 + 2.52
```

A + Gap time indicates that any wait time of the frames in the previous sequence can be increased.

This is a negative gap time.

```
Edit SEQUENCE 4                    0:00'05.50
 - 2.00
```

A - Gap time will execute the next sequence before the previous sequence has been completed. To avoid this overlap reduce the wait times in the previous sequence.

If no (gap) time appears, the previous sequence has no sync time or is a LIVE CUE sequence.

If the sequences were synced to time code without a show in memory, the gap time will indicate the time between the previous sequence and the sequence in the display.

Fine Tuning the Sync Times

There are two ways to adjust sequence Sync Times, (A) enter an amount of time that the Sync Time is to execute earlier or later, or (B) enter a complete new Sync Time to replace the Sync Time in the display.

A. ENTERING THE AMOUNT OF TIME THAT IS TO BE EARLIER OR LATER:

1. Step to Sequence to be changed.

CHANGE

```
CHANGE SEQUENCE 12                 2:12'23
                                   ?:??'??
```

2. Press the Number [#] keys for the amount of time earlier or later that the sequence is to be executed.

a. If a sequence is to execute EARLIER: Pressing the Backspace key, ◄ the Sync Time will be reduced.

Example: Sequence Sync Time is 0:02'10.23. If it is to be executed 1 second earlier.

CHANGE

#1

◄

SEQUENCE 12	0:02'10.23
CHANGE SEQUENCE 12	0:02'10.23 ?:??'??
CHANGE SEQUENCE 12	0:02'10.23 0:00'01
SEQUENCE 12	0:02'09.23

b. If a sequence is to execute LATER: Press the Step ► (Help) key, the Sync Time will be increased.

Example: Sequence Sync Time is 0:02'10.23. If it is to be executed 2 seconds later.

CHANGE

#2

►

SEQUENCE 12	0:02'10.23
CHANGE SEQUENCE 12	0:02'10.23 ?'??.??
CHANGE SEQUENCE 12	0:02'10.23 0:00'02
SEQUENCE 12	0:02'12.23

B. ENTERING A COMPLETE NEW SYNC TIME:

1. When sequence Sync Time is displayed, press Change key. Below the Sync Time, question marks will appear.
2. Press the new Sync Time using Number keys. If the time is correct, press the Accept key.

Entering a Sync Time

The time is read in hours: minutes' seconds and hundredths of a second. 0:00'00.00

When entering hours it is necessary to enter all other times.
Example: 2:23'10.30
Press Number keys 2 2 3 1 0 . 3 ACCEPT

When entering minutes, it is also necessary to enter seconds.
Example:
Press Number keys 3 0 6 then ACCEPT

When entering seconds,
Example: 0:00'21.00 Press 2 1 then ACCEPT

When entering hundredths of a second it is necessary to press the decimal point first and then the number:
Example: 0:00'00.23 Press . 2 3 ACCEPT

Syncing Repeat Sequences to Time Code

Sequences that are in a Repeat segment of the program are not the same as standard sequences when it comes to syncing and changing the sync times.

Changing any sequence in a "Repeat" to Sync Time ?? marks will change all of the following sequences in the "Repeat" to Sync Time ?? marks.

While the time code is played into the Pro Sixteen, pressing the Run key will assign the time from the tape to each sequence. After all of the sequences in the "Repeat" have been synced to the time code, any of the "Repeat" Sync Times can be changed independently.

The sequence following the "Repeat" sequences will not be affected when the "Repeat" sequence Sync Times are changed or resynced to the time code.

Resync Sequences

To resync many sequences, go to the first of the sequences.

Go To 1 0 ACCEPT	Edit SEQUENCE 10 0:1'20.25
CHANGE	CHANGE SEQUENCE 10 0:1'20.25 ??:??'
THRU	CHANGE SEQUENCE 10 thru ?

Press the Number keys to enter the last sequence to be resynced.

3 7 ACCEPT	CHANGE SEQUENCE 10 thru 37 0:00'00
C	CHANGE SEQUENCE 10 thru 37 CANCEL SEQUENCE TIMES ?:??'??
ACCEPT	Edit SEQUENCE 10 Sync Time ??

All sync times from 10 thru 37 will be changed to ?? marks for resyncing. Play the time code and resync these sequences.

Change Many Sequence Sync Times

To change a series of sync times step to (or Go To) the first sequence of many to be changed.

	Edit SEQUENCE 10 0:01'20.25 + 13.00
CHANGE	CHANGE SEQUENCE 10 0:01'20.25 ?? ?? ??

THRU

```
CHANGE SEQUENCE 10 thru ?
```

Press the Number keys to enter the last sequence number that is to be changed. (To correct entry, press Backspace key.)

3 7 ACCEPT

```
CHANGE SEQUENCE 10 thru 37
                        0:00'00
```

Press the Number keys to enter the amount of time that the sync times are to change.

1 2

```
CHANGE SEQUENCE 10 thru 37
                        0:00'12
```

This amount of time can be earlier (subtracted from) or later (added to) than the current times. If all the sync times are to be later, press the step (Help) ▶ key. If all the sync times are to be earlier, press the ◀ Backspace key.

Earlier ◀ Later ▶

```
Edit SEQUENCE 10  0:01'08.25
 + 1.00
```

```
Edit SEQUENCE 10  0:01'32.25
 + 25.00
```

Preceding and following sync times will not change by this operation.

Be sure to go to the following (if later) or to the preceding (if earlier) sequence and check the gap time. If gap time becomes negative, edit accordingly.

NOTE: All LIVE CUES and sync times with ?? question marks can not be changed by this operation. A SERIES OF SYNC TIMES CANNOT BE CHANGED WITHIN A LOOP OR REPEAT. These times must be changed individually.

Cancel Sync Times of a Show

Cancel sequence Sync Times is #10 in the menu.

```
MENU #10
 ACCEPT to CANCEL SYNC TIMES
```

This message applies only to one show when there are more than one show in the programmer.

Pressing the Accept key will delete all of the Sync Times for this show. Before doing this, be sure that there is a tape save of the show memory.

LIVE CUES can be changed but not cancelled. This feature (cancel seq. times) is a time saver if the entire show is to be resynced or if a different audio track is to be used with the same program commands. Example: Different foreign language shows, different clients, etc.

NOTE: To cancel only a fraction of the sync times, see page 46.

LIVE CUE Sequence

LIVE CUE sequence often used in mixed presentations (live and from tape), is executed manually pressing the Run key or remote button.

Change to a live Cue

```
Edit SEQUENCE 3      Sync Time ??
```

CHANGE

```
CHANGE SEQUENCE 3    Sync Time ??
                          ?:??'??
```

#C

```
CHANGE SEQUENCE 3    Sync Time ??
                        LIVE CUE
```

ACCEPT

```
Edit SEQUENCE 3      LIVE CUE
```

Change a LIVE CUE to sync time.

```
Edit SEQUENCE 3      LIVE CUE
```

CHANGE

```
CHANGE SEQUENCE 3    LIVE CUE
                        LIVE CUE
```

#C

```
CHANGE SEQUENCE 3    LIVE CUE
                          ?:??'??
```

Enter Time if known, otherwise

ACCEPT

```
Edit SEQUENCE 3      Sync Time ??
```

Playing a show with LIVE CUE sequences in the programmer, the tape must be stopped during the LIVE CUE sequences. This can be either a programmed stop and start or a manual start/stop operation of the recorder. When using a tape stop, a programmed tape start is also recommended. The tape stop is entered in the last frame of the last canned sequence. The tape start is programmed in the last frame of the last LIVE CUE sequence.

If time code is fed continually to the programmer when at a LIVE CUE, display reads

```
SEQUENCE 10          LIVE CUE   9:10'23
```

The show will not update beyond this sequence until all of the LIVE CUE sequences have been executed by pressing Run key. This protects against accidental execution of LIVE CUE sequences.

Programming Tape Start/Stop for Mixed Presentations

There are two different conditions when playing a mixed presentation. When time code is used on the canned tape, the momentary tape stop (AUX A3 on - AUX A3 off) to be entered is the last sequence of the canned segment of the show. However, when playing Mate-Trac signal for the canned sequence, the momentary tape stop (AUX A3 on - AUX A3 off) must be entered in two sequences.

Example:

1. Playing show using time code signal

Sequence 30 Sync time 5:00'02		
fr 1 A3 off	2 sec rate	wait 3 sec
fr 2 AUX A3 on		wait .4 sec
fr 3 AUX A3 off		End of Seq 30
Sequence 31 Live Cue		
fr 1 B4 on	3 sec rate	End of Seq 31
Sequence 32 Live Cue		

2. Playing show using Mate-Trac signal

Sequence 30 Sync time 5:00'02		
fr 1 B3 off	2 sec rate	wait 3 sec
fr 2 AUX A3 on		End of Seq 30
Sequence 31 Live Cue		
fr 1 AUX A3 off		wait 0 sec
fr 2 B4 on	3 sec rate	End of Seq 31
Sequence 32 Live Cue		

In example 1, sequence 30 will turn on the AUX A3 to stop the tape player, (since there is no data recorded on tape (no Mate-Trac)). The Pro Sixteen will turn AUX A3 off after the wait time (.5) has timed out.

In example 2, Sequence 30 will be recorded on tape for the canned segment. When AUX A3 turns on, the tape stops. If AUX A3 off were recorded on tape (.5 after AUX A3 on) the AUX A3 would remain on because the tape stop before playing the AUX A3 off data. In order to turn AUX A3 off it is best to put the entry in the first LIVE CUE.

RULE: When playing a mixed presentation using Mate-Trac signal, the tape stop on (AUX A3 on) must be the last frame in the last canned sequence and the tape stop off (AUX A3 off) entered must be in the first LIVE CUE sequence.

Inserting a New Frame at the End of a Sequence

Inserting an additional frame [to the end of a sequence] is a two step operation. It is first necessary to change the End of Sequence to a Wait Time. This does not append a sequence.

Step the memory so the last frame of the sequence appears in the display.

```
Edit 10 fr 5          fade lamps
 at 3s rate    NO ADV     END of SEQ 10
```

CHANGE	CHANGE SEQ 10 fr 5 fade lamps at 3s rate NO ADV END of SEQ
#2	CHANGE SEQ 10 fr 5 fade lamps at 3s rate wait 2 sec
ACCEPT	Edit SEQUENCE 11 0:03'20.38

The End of Sequence has now been changed to a wait time, next insert frame 6 in sequence 10. When the above sequence is in the display, press:

INSERT	INSERT 10 fr 6
A1 B3 END SEQ	INSERT 10 fr 6 fade lamps at"3s"rate END of SEQ 10
ACCEPT	Edit SEQUENCE 11 0:03'20.30

If wait time was entered, the programmer remains in the Insert mode enabling more than one frame to be entered. When an End of Sequence is entered, the programmer will revert to Edit mode.

Inserting an Additional Sequence Into the Show Memory

There are 2 procedures for adding a sequence to show memory: (A) insert a complete new sequence and, (B) divide a current sequence by changing a wait time to an End of Sequence.

Whenever a sequence is added into the show memory, the new sequence will assume the number of the current sequence, the current and all following sequence numbers will increase by one.

Example: When inserting a new sequence at sequence number 5, the new sequence becomes 5 and the old number 5 sequence becomes number 6, 6 becomes 7, etc.

The sequence Sync Times of all following sequences will all remain the same and the new sequence will have Sync Time ??.

A. INSERTING A COMPLETE NEW SEQUENCE:

1. Step to the sequence which will follow the new sequence that is to be inserted.
Example: A new sequence is to be inserted after sequence 4 and before sequence 5.

Step to Sequence 5.	Edit SEQUENCE 5 Sync Time ??
INSERT	INSERT SEQUENCE 5 Sync Time ?? ?:??'??
ACCEPT	INSERT 5 fr 1

A new sequence with ?? sync time has been added. Old sequence 5 will become sequence 6 and all following sequences will increase by one.

2. Make all the frame entries for this new sequence. The display will remain in the Insert mode until the End of Sequence has been entered in the last frame of this sequence.

3. If a Sync Time was not entered for the new sequence, use either the Change method or sync the time code from tape. All following sequence numbers will increase by a count of one.

B. TO DIVIDE A SEQUENCE (MAKING AN EXISTING SEQUENCE INTO TWO SEQUENCES):

NOTE: An END of SEQ cannot be inserted within a sequence. Only frames can be inserted.

1. Step to the frame that will be the last frame of the sequence to be divided.

	Edit 9 fr 8 fade lamps at 2s rate wait 2 sec
CHANGE	CHANGE 9 fr 8 fade lamps at 2s rate wait 2 sec
END SEQ	CHANGE 9 fr 8 fade lamps at 2s rate END of SEQ
ACCEPT	CHANGE SEQUENCE 10 Sync Time ?? ?:??'??

2. If sync time is known, enter a time for the new sequence.

ACCEPT	CHANGE SEQUENCE 5 Sync Time ??

NOTE: To add an additional sequence ahead of sequence 1 it's necessary o use the second (B) procedure since a new sequence cannot be added ahead of sequence 1.

Delete Key

Pressing the Delete key when at a sequence, provides two different displays.

1. If a sequence does not have any frames, or if the preceding sequence does not have an End of Sequence, the display will read:

This will delete only sequence and its Sync Time.

```
DELETE SEQUENCE 11          0:03'20.38
                        ACCEPT to DELETE
```

2. If a sequence has frames in the memory and the preceding sequence has an End of Sequence, the display will read:

This will delete the sequence its Sync Time and all of the frames in the sequence displayed.

```
DELETE SEQUENCE 11 thru ?
```

Joining Sequences

To join two sequences into one larger sequence, it is necessary to eliminate a sequence and its sync time. This reduces the total number of sequences in the memory.

A two step operation is required. First it is necessary to change the End of Sequence entry to a wait time. Once this is done, the second step is to eliminate the sequence and its sync time.

Caution: if the End of Sequence has not been changed to a wait time, the sequence and all of its frames will be deleted when using the Delete key. The word thru must not appear in the display for this operation.

Example: Step memory to the sequence that is to be eliminated.

```
Edit SEQUENCE 11                0:03'20.38
```

Backspace to previous frame (6)

◀

```
Edit 10 fr 6          fade lamps
 at 3s rate    TO ADV     END of SEQ 10
```

1. Change the "End of Sequence" of the preceding sequence (10) to a "wait time".

CHANGE

```
CHANGE 10 fr 6        fade lamps
 at 3s rate    TO ADV     END of SEQ 10
```

WAIT

```
CHANGE 10 fr 6        fade lamps
 at 3s rate    TO ADV     wait ?? sec
```

#2

```
CHANGE 10 fr 6        fade lamps
 at 3s rate    TO ADV     wait 2 sec
```

ACCEPT

```
Edit SEQUENCE 11                0:03'20.38
```

2. Delete the sequence.

DELETE

```
DELETE SEQUENCE 11              0:03'20.38
                          ACCEPT to DELETE
```

ACCEPT

Pressing the Accept key will delete sequence (11) and its sync time. The frames of this sequence (11) will append to the frames of the preceding sequence (10) thus increasing the number of frames in sequence (10).

Once the sequences have been joined, the numbers of the following sequences will decrease by one. All of the sequence sync times will remain as before.

Deleting One or More Complete Sequences

There are three deletes described in this section: 1) deleting only one sequence, 2) deleting a number of sequences, and 3) deleting to the end of the show.

Deleting a sequence differs from eliminating a sequence. When deleting a sequence, all the frames in the sequence will also be deleted.

To delete a sequence and all of its frames, locate the sequence to be deleted in the display.

When at the sequence, press the Delete key, the display will read:

[DELETE]

```
DELETE SEQUENCE 3 thru ?
```

1. **DELETING ONE SEQUENCE** -- To delete just this sequence and its frames, press the Number key that corresponds to the sequence number in the display (3) or the Thru key. This number will appear after the thru statement and the Accept to Delete will appear.

[#3] or [THRU]

[ACCEPT]

```
DELETE SEQUENCE 3 thru 3
                ACCEPT to DELETE
```

   Pressing the Accept key will delete the sequence, its Sync Time and all of the frames in the sequence.

2. **DELETING MORE SEQUENCES** -- If many sequences are to be deleted, locate the first sequence in the display that is to be deleted, press the Delete key.

[DELETE]

```
DELETE SEQUENCE 2 thru ?
```

[#5]

[ACCEPT]

```
DELETE SEQUENCE 2 thru 5
                ACCEPT to DELETE
```

Enter the number of the last sequence to be deleted. Press Accept key. Sequences between and including the 2 numbers (2,3,4,5) will be deleted.

3. **DELETING TO THE END OF THE SHOW** -- If all sequences from this sequence to the end of the show are to be deleted, pressing the Delete key and then the Decimal key [.] will display:

[DELETE]

```
DELETE SEQUENCE 2 thru ?
```

[#.]

[ACCEPT]

```
DELETE SEQUENCE 2 thru END of SHOW
                ACCEPT to DELETE
```

Pressing the Accept key will delete all the memory from sequence 2 to end of the show.

Deleting Many Frames

There are two basic methods of deleting many frames within a sequence.

If a group of frames to be deleted are located in the center of a sequence, use the frame by frame delete method. - Step to the first frame to be deleted, press the Delete key, then Accept key the same number of times as the number of frames to be deleted.

If a group of frames to be deleted are inclusive to the end of that sequence, use this method. - **Example:** Delete the last group of frames in Sequence 9. Step to the last frame that is to remain in sequence 9.

	Edit SEQUENCE 9 fr 8 fade lamps at 1s rate wait 2 sec
CHANGE	CHANGE SEQUENCE 9 fr 8 at 1s rate wait 2 sec
END SEQ	CHANGE SEQUENCE 9 to 8 at 1s rate END of SEQ 9
ACCEPT A new sequence 10 appears.	CHANGE SEQUENCE 10 Sync Time ?? ?:??'??
ESCAPE	Edit SEQUENCE 10 Sync Time ??
DELETE	DELETE SEQUENCE 10 thru ?

Press the # or Thru key corresponding to this sequence number.

1 0 or THRU	DELETE SEQUENCE 10 thru 10 ACCEPT to DELETE
ACCEPT	Edit SEQUENCE 10

The new sequence 10 and all the old frames of sequence 9 have been deleted.

Standby

When slides are to be put in and out of the trays, it is best to first place the Pro Sixteen into STANDBY. With Mate-Trac on, trays will reset. Pressing Standby key will turn off the projector lamps and the green Mate-Trac LED. When using a Power Control, Standby will turn the power to the projectors "off". When pressing the Standby key again, power to the projectors and green Mate-Trac LED will turn "on". This function is remoteable when shorting pins 2 and 3 to pin 5 (forward, reverse and common) of the remote input receptacle.

Pressing the Standby key will display Standby for a couple of seconds and then return to the mode and location in the programmer.

- STANDBY -

When in Standby, turning the Pro Sixteen off and on will not affect Standby.

Create Key

Create key has a new feature. Pressing the Create key when not at the end of the memory will display a message if there are no frames in a sequence or no END of SEQ entry. Pressing the Create key will take the memory to the sequence following this condition.

When pressing the Create key if display reads:

```
No `END of SEQ 2 entry
Press <- to locate and correct
```

If a sequence does not have an "End of Seq" entry do either 1) press Change key, change the last wait to End of Seq and Accept, or 2) after Backspace, step to next sync time, press Insert key, insert another frame with an End of Sequence and Accept.

If display reads:

```
No frames in SEQUENCE 2 ...
```

If no entries are located in the previous sequence (use Step keys) and either delete the sequence, in this case Seq 2, or insert entries for this sequence greater than it (Seq 3 in this example). Press Insert and enter frames for this sequence.

```
INSERT 5 fr 1
```

This appears if this show is not the last of many shows in the programmer, or the show has a NEXT SHOW entry.

To add to the end of the show go to the End of Show display, press Insert key.

```
Use INSERT for SHOW 1
or MENU #11 to CREATE NEW SHOW 2
```

Since the Create key is active only while in the last show in memory the Insert key is to be used in all shows preceding the last show.

```
END of SHOW 1
```

If only one show is in memory, the NEXT SHOW entry can be deleted and re-entered after creating the remainder of the show.

Change Key

Change key has a new feature incorporated. Whenever the Change key is pressed while editing, it is not necessary to step back in the frame to change a lamp cue.

```
CHANGE 21 fr 5        fade lamps
 at 4s rate    TO ADV    wait 2 sec
```

Pressing any Lamp keys is enabled, this speeds up the editing process.

Wait time or End of Sequence can be changed by pressing the End Sequence key or the Number keys. Pressing the Number keys, when the end of the sequence appears in the display, will change End of Sequence to a wait without pressing the Wait key.

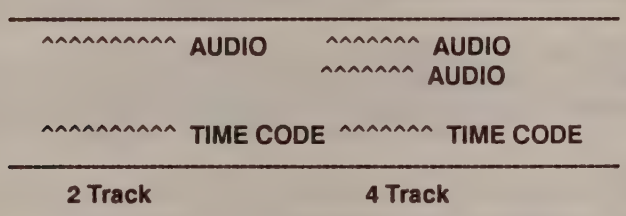
Pressing the To Adv or No Adv keys without stepping back is possible.

To change the fade rate, press the Backspace key once.

```
CHANGE 21 fr 5        fade lamps
 at 4s rate
```

NOTE: To change a lamp to fade to level, to flash, stop flash, loop or repeat, it is necessary to press the backspace key twice.

Audio Tape



1. Record TIME CODE on master audio tape.
2. Program show into Pro Sixteen memory.
3. While playing time code into Pro Sixteen, press Run key to sync sequences to audio tape. When the Run key is pressed, the time from the tape will be stored with the sequence number in the Pro Sixteen memory.
4. Once show has been run by pressing the Run key, rewind tape, play tape and watch show run by the time code from the audio tape.
5. Whenever a sequence is being executed either too early or too late, stop tape and change sync time in memory.
6. Rewind tape and play the sequence again. If more adjusting is necessary, repeat and then go on.
7. After adjusting sync times, rewind tape, and play entire show. Once show is perfectly in sync with the audio tape, a Mate-Trac tape can be recorded.

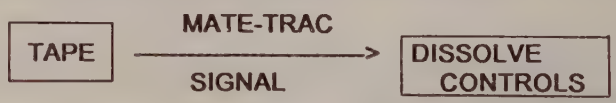
Making Final Show Tapes When Using Time Code

Show tapes can be in different formats and track configurations.

There is either the time code track or the Mate-Trac signal. When using the time code signal, the Pro Sixteen must be in the system since the Pro Sixteen will generate the Mate-Trac signal to the dissolve controls.

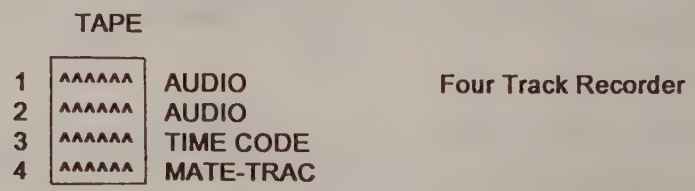
Making the time code sync track is explained on page 40.

Using the Mate-Trac signal to control the show, the Pro Sixteen is not needed since the tape will produce the signal direct to the dissolve controls.

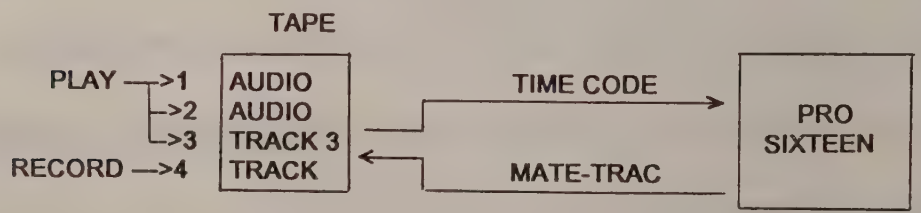


IMPORTANT: Before recording a final show tape be sure to edit the show completely, also check the Pro Sixteen menu #8 when a show is to run on standard dissolve controls Two Plus, Four Plus, etc., Menu #8 must be in the (1=Standard) position. If the show is for playback using the enhanced Mate-Trac signal for SPCs, it must be (2=SPC).

Mate-Trac show tape can be produced by two methods. First is when using a four track recorder (can record 4 independent tracks). In this method the audio is recorded on tracks 1 and 2, time code on track 3 and finally the Mate-Trac signal on track 4.



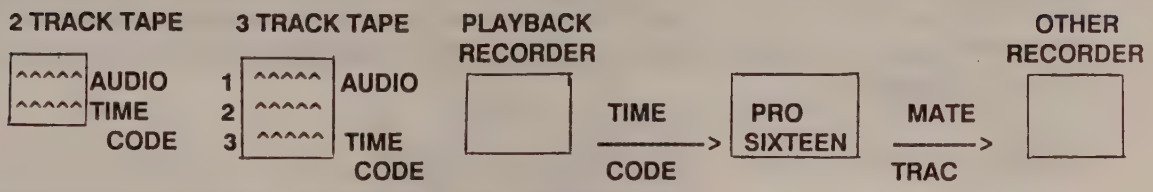
After the show has been synced to the time code, the time code is played into the Pro Sixteen. The output, (Mate-Trac signal) of the Pro Sixteen is connected to the track 4 of the recorder. While the tape is playing tracks 1, 2, and 3, track 4 is recording Mate-Trac signal. After the Mate-Trac signal is on the tape, either method of playback (Time Code or Mate-Trac) is available from one tape.



The second method is when using a two or three track recorder.

If using a two or three track recorder, the hook-up will be as follows:

In this method the final show tape is made using a second recorder.



Records both audio and Mate-Trac Signals simultaneously.

First the audio track is recorded on track 1, or 1 and 2. Then the SMPTE time is recorded on track 2 or 3 per above drawings. After the show has been synced to the time code, the audio and sync track is copied onto another tape using another recorder. The master tape is put away for safe keeping.

Making the Show Tape Not Using Time Code

A show tape has all the Mate-Trac playback information needed by the dissolve control recorded alongside the sound track.

Mate-Trac is continuously sent out from PRO SIXTEEN to the dissolve control during programming, editing, and show program playback from memory. This Mate-Trac is recorded on tape when a Mate-Trac show tape is made.

To playback a taped presentation only the dissolve control and the show tape are needed. The PRO SIXTEEN and show program memory dump are needed only if time code is to be played or additions are made to the show.

Before erasing a show program from memory, make a show program memory dump. A show program cannot be recovered by playing Mate-Trac back into the PRO SIXTEEN.

1. TAPE RECORDER SETUP FOR RECORDING AND PLAYING BACK MATE-TRAC. Forward the tape past the show program memory dumps. Get the tape recorder ready to record on the sync track.

Leave the cable between OUT on the PRO SIXTEEN and dissolve control IN connected. Connect a shielded audio cable between the OUT on the PRO SIXTEEN and the tape recorder sync line IN. Connect a second shielded cable between the tape recorder sync line OUT and the IN on the PRO SIXTEEN.

If the message window alternates between PLAYING SHOW and SEQUENCE 1 when the tape recorder sync channel input and output level controls are turned up, disconnect the cable running between the tape recorder sync line OUT and the IN on the PRO SIXTEEN. Mate-Trac going to the tape recorder and then coming directly back to the PRO SIXTEEN causes this alternation. To prevent this, record and playback Mate-Trac using only 1 audio cable at a time.

Record Mate-Trac between -3 and 0 VU.

2. Reset to the show program beginning.

RESET	SEQUENCE 1

3. Start the tape and begin recording. Record a minimum of 4 seconds of Mate-Trac. Then run sequence 1.

RUN	SEQUENCE 1 fr 1 wait 2 sec

As this sequence runs, Mate-Trac is sent out to both the dissolve control and to the sync track of the tape recorder.

- In making a real show tape, the Mate-Trac is recorded while listening to the soundtrack. If Time Code is not used, RUN is pressed at appropriate audio cues.

Record sequence 2.

RUN	SEQUENCE 2 wait 2 sec
	END of SHOW

Stop the tape.

- The Mate-Trac sent out from the Pro Sixteen has commands and background information. Frames tell the dissolve control to start new actions. Background information tells the dissolve control where the projectors should be as a result of previous frames - which lamps are on, which are off, where the trays should be, etc.

- If the trays are set to their correct starting positions when the dissolve control is turned on or reset, Mate-Trac will synchronize the projectors no matter where in the show the tape is started.

4. Rewind the tape. (If necessary, disconnect the cable between the OUT on the Pro Sixteen and the tape recorder sync line IN. Then reconnect cable between the tape record line OUT and the IN on the Pro Sixteen).

Play the tape. Adjust the tape recorder sync output until the normal signal indicator on the Pro Sixteen lights.

Receiving sequence 1 Mate-Trac.

PLAYING SHOW

As soon as Mate-Trac is received, the projectors reset. The Mate-Trac from the show tape is running the dissolve control. The Pro Sixteen follows passively along.

NOTE: If sequences are synced to time code, do not play Mate-Trac signal thru the Pro Sixteen. The sequences are looking for a time code and therefore will not follow or send out Mate-Trac to the dissolve controls.

PLAYING 1 SEQUENCE 1
PLAYING 1 SEQUENCE 2

5. Play the show tape back without the Pro Sixteen. Disconnect the audio cables between the tape recorder, Pro Sixteen, and dissolve control. Connect an audio cable between the tape recorder sync line OUT and the dissolve control Mate-Trac IN. Rewind and play the tape.

NOTE: If playing Mate-Trac thru the Pro Sixteen and the show does not play, check menu #3 Generate time code. It should be in position (1 = SMPTE).

Home Trays Key

"Home" in the Pro Sixteen is unique from other programmers. A "Home" entry does not reset the memory of the programmer nor does it turn off all lamps, etc. The only thing it does is to cycle all projectors to their start tray positions. Since other frames can be entered after a "home", tape rewind, tape stop, house lights up, and all other types of controls can be executed while the trays are cycling home. - When creating,

HOME	CREATE 44 fr 4 Home Trays

If the start of each show has a "trays start at" statement, the trays will return to the start tray position. This is not necessarily tray position one.

Tray Changing

To make tray changing easier, after the Home Trays frame (if start tray is position 1), enter a Reverse to all projectors. The trays will return to zero position for easy removal.

Next Show Key

Next Show in the Pro Sixteen is a unique feature. This entry will appear in the display as "NEXT SHOW". Its only function is to go to the start of the next show in the programmer memory. When there is only one show in the memory, Next Show will reset the memory back to Sequence 1. When there is more than one show in the memory, the NEXT SHOW 2 entry will advance to the start of show #2 in the memory. At the end of the last show in memory, NEXT SHOW #1 will appear in the display. In this case, the memory resets to the beginning of show #1.

CREATE	CREATE 44 fr 5
NEXT	CREATE 44 fr 5 NEXT SHOW 2
ACCEPT	END of SHOW 1

When inserting a NEXT SHOW entry, it is necessary to first change the End of Seq in the last sequence.

Step to or Go To the last frame in the show.

Example:

CHANGE		Edit 44 fr 10
WAIT	#6	CHANGE 44 fr 10 fade lamps at 2s rate END of SEQ
ACCEPT		CHANGE 44 fr 10 fade lamps at 2s rate wait 6 sec
INSERT		Edit SEQUENCE 45 22:11'00
NEXT	ACCEPT	INSERT 44 fr 11 NEXT SHOW 2

NOTE: If only one show is in memory, NEXT SHOW will return the memory to Sequence 1 and home the trays automatically.
Rule: NEXT SHOW must be the last entry in a show memory. All entries after NEXT SHOW will not be executed. Use Show Presets for entries following NEXT SHOW (see page 63).

Programming a Tape Stop or Rewind for Playback with the Express Four

The tape rewind and tape stop entry for the Express are identical. Position of the switch on Express Four determines whether tape will stop or rewind. At the end of the show a Home TRAYs entry is entered after the last visuals of the show have faded off. An auxiliary A3 on/off is entered in the next sequence.

```
Edit 45 fr 6          Home Trays
```

CREATE

```
CREATE SEQUENCE 46                0:09'00
```

AUX | A3 | WAIT | . | #5

```
CREATE SEQUENCE 46 fr 1   AUXILIARY
                          wait .5 sec
```

ACCEPT

An auxiliary A3 is now turned on. Next the auxiliary must be trned off. Press Auxiliary, A3, then END of SEQ and Accept key.

AUX | A3 | END SEQ

```
CREATE 46 fr 2        AUXILIARY
                      END of SEQ
```

ACCEPT

```
CREATE SEQUENCE 47  Sync Time ??
                    ?:??'??
```

This momentary A3 will either rewind or stop the Express Four.

NOTE: Because of tape dropouts, it is recommended that the aux A3 on/off be entered three to five times (6 to 10 frames) for more reliable operation.

Playing Show from Tape using Time Code

Connect the tape recorder sync output to the Pro Sixteen sync input. Be sure to set the Menu #3 Generate time code to the proper mode (1=SMPTE). If the time code signal is EBU, set to (2=EBU). Press Escape key and the Reset key before starting show tape.

When playing a show tape using time code, it is necessary to have the show loaded into the memory of the Pro Sixteen. Each sequence will execute when the time from the tape equals the sequence Sync Time. When a sequence is executed, the display will show both the sequence and the frame numbers and whether it is SMPTE or EBU time code.

```
SEQUENCE 6 fr 1       SMPTE       6:13'21
```

1. If the show has LIVE CUE sequences, the LIVE CUE sequences will ignore the time code from tape (the time will continue to be displayed). The LIVE CUE sequences must be executed manually by pressing Run key. This protects against accidental execution of the LIVE CUE sequences.

```
SEQUENCE 10           LIVE CUE
```

2. If at a LIVE CUE and the time code from the show tape is for sequences ahead of the LIVE cue, the Pro Sixteen will update to the earlier sequence. If the time is past the LIVE cue required, the show will not update. The LIVE CUE sequences must be executed by pressing the Run or the Go To keys (go to cue sequence). NOTE: If Menu #3 is set to (2=EBU), playing SMPTE time code into the Pro Sixteen will cause the Mate-Trac LED to come on and display will show EBU. When this happens, set Menu #3 to (1=SMPTE).

Playing Many Shows from Memory

Sometimes many different modules (shows) are to be played from the programmer. One advantage of this method is to save time loading and erasing each show in the programmer. These modules may be canned, live, or a combination of canned and live.

Another advantage is the tapes can be picked at random for playback, especially during rehearsal since all presenters are not always available. Flexibility is the answer.

1. Press the Go To kev twice.

   [Go To] [Go To]

   ```
   1 SEQUENCE 1
    Go To SHOW
   ```

2. Press the Number key that corresponds to the show number to be run.

   [#2]

   ```
   1 SEQUENCE 1
    Go To SHOW 2
   ```

   [ACCEPT]

   ```
   2 SEQUENCE 1
   ```

3. Press Accept key - memory will go to the show chosen. Note the number (2) before the word Sequence, this is the number for show 2.
4. Play the show tape or operate live.
5. To select a different module, repeat steps 1-4.

IMPORTANT: To verify each show before starting to play. Reset show, press the Escape key and backspace to the show identifier.

Running a Continuous Show Without Tape (3=AUTO)

By selecting the Internal Clock to the (3) Auto mode, the show will run continuously from the Pro Sixteen internal clock when no time code is input. Pressing the Run key or a remote start button, starts the internal clock. When a sequence sync time equals the clock time, the sequence executes.

A show reset (NEXT SHOW) at the end of memory will reset the memory and start the internal clock at zero time.

```
MENU #9   Set INTERNAL CLOCK
                1=ON   2=off  (3=AUTO)
```

To abort the continuous operation, press the Escape key. The clock will stop at that time. Pressing the run key the clock will continue to run from the stop time.

Running Show Without Tape - Live Plus Internal Clock

When operating a LIVE show, and the internal clock is on, all sequences that are LIVE will stop the internal clock. When the sequence has a time code, pressing the Run key will start the clock, the clock will run all the sequences with sync times until a LIVE sequence appears. The internal clock stops and waits for a manual operation of the Run key. This method is used only if a series of sequences were to fit a rigid time execution rather than undisciplined manual operations. Display reads:

For Internal Clock portion

```
SEQUENCE 10          CLOCK      0:02'21
```

For LIVE portion

```
SEQUENCE 10          LIVE CUE
```

See next page for turning on internal clock.

Playing Show From Tape with Internal Clock On

Internal Clock is off when power to the Pro Sixteen is turned on. To turn the clock on, go into the menu to #9. Press Menu, and then #9 key.

MENU #9	Set Internal Clock
1=ON	(2=OFF) 3=AUTO

MENU #9	Set Internal Clock
(1=ON)	2=OFF 3=AUTO

Pressing the Number key 1, will turn the internal clock "ON".

The Internal Clock can be used as a back up to the time code being received from the tape. When the internal clock is on, when losing the time code from the tape, the internal clock will take over and continue to execute the programmer memory. The display will read:

SEQUENCE 10	CLOCK	0:02'21

Once the time code is again received from the tape, the internal clock no longer executes the memory.
The display will read:

SEQUENCE 1	SMPTE	0:04'60

Time code received from tape has priority over the internal clock. To stop the Internal Clock, press the Escape key.

(3=AUTO) see page 62

Show Presets

Some data can be entered into memory ahead of Sequence 1. This usually is for auxiliary on, lighting, or other controllable devices.

To enter these, step to display that shows the first sequence and its execute time.
Press the INSERT key.

Edit SEQUENCE 1	0:00'09
INSERT 0 fr 1	

The display will show sequence 0. Enter any number of frames.
There are no wait times or end of seq in Seq 0.
All entries in this preset area will be active whenever the programmer is at Sequence 1.
The programmer will remain in the Insert mode for any number of frames.
To exit this sequence, press the Escape key.

To add more frames to the presets after a show has been programmed, step to Edit sequence 1 display, press the Insert key to add frames to the end of the existing frames in sequence 0. When stepping to any frame, pressing the Insert key will allow the addition of a frame ahead of the displayed frame.

Start Show at Tray Position ??

When the Create key is pressed for the first time, the display will read:

CREATE
ACCEPT
◀

CREATE SEQUENCE 1	Sync Time ?? ?:??'??
CREATE 1 fr 1	
SHOW starts w/Trays at 1	

- The programmer defaults to a tray start position of 1.

- To program a tray start position other than tray position 1, while at the start show display, press the Change key.

CHANGE	CHANGE SHOW starts w/Trays at 1 ??

Press the Number keys for tray start position if other than 1 (example 0).

0	CHANGE SHOW starts w/Trays at 1 0
ACCEPT	SHOW starts w/Trays at 0

NOTE: When recording "zero tray start" Mate-Trac on tape, record 10-15 seconds at beginning of show tape. When playing show, play a few seconds of the tape. Trays will go to zero, stop tape. Show is now ready to be played.

SHOW starts w/Trays at 1
SPC

NOTE: If display has the SPC on the bottom line, the enhanced Mate-Trac signal in Menu #8 is on for SPC operation only.

When programming more than one show using the same trays, see page 70.

Loop and Repeat

When display reads:
(in upper right corner) R = 1 R = 2 etc. or L = 1

- This indicates that either a Loop or Repeat was programmed into the memory. Programming one frame only in a loop or repeat is not allowed since it would be a do nothing entry.
- The R = 1, etc. identifies which number of the total number of Repeat times are in the program.
- Remember that editing is possible only in the first (L = 1) Loop. It is not possible to change or insert in the following portion of the loop program since they are not displayed.
- The Start Repeat entry is a component of the following frame, therefore there will be two displays with the same frame number. Repeat Number of Times is a separate frame.
- If a Loop ? Times is entered, when syncing to SMPTE, pressing the Run key will put the number of times into the programmer replacing the ? mark.
- When a Start Loop or Start Repeat is deleted, the Loop # Times or Repeat # Times will automatically be deleted also.

IMPORTANT: When in Create or Insert, a Loop # of Times or a Repeat # Times can not be entered into the first frame of any sequence. This can happen only when other frames at the beginning of a sequence are deleted. If either of these becomes frame one, enter a do nothing frame as frame one. This is accomplished by using the insert key. To enter the do nothing frame, press the wait key, number 0 for zero time and then the Accept key. The Loop or Repeat # of Times then becomes frame 2.

Syncing Loop ? Times to Time Code

When a Loop ? Times entry has been programmed it is necessary to press the Run key to terminate the Loop ? Times. When the Run key is pressed between sequences, the Loop ? Times will be replaced with a Loop # Times. If the looping is too long, it is necessary to edit the Loop # Times to a smaller number. Use the Change key to edit this number.

Erase and Un-erase All Shows

This is Menu #0 (last in menu display). One of these two will appear in the display.

ACCEPT to ERASE all SHOWS
ACCEPT to UN-ERASE all SHOWS

If a show is in the memory: ACCEPT to ERASE all SHOWs? will appear. Once the show has been erased: ACCEPT to UN-ERASE all SHOWS? will appear as Menu #0. This feature enables the recovery of the last show that was erased from the programmer memory. If no show is in memory, the Mate-Trac output will go into standby (off).

IMPORTANT: If one show of a many show memory has been deleted, that show will not be recovered, therefore be sure to record a show memory save before deleting one of many shows.

Programming ZERO (0) Wait Times

Zero (0) wait times can be programmed only with auxiliaries or "do nothing" frames. If 0 wait time is entered into any other frame, the Accept key is disabled thus not allowing this entry.

Programming a Dummy Sequence or Frame

A "do nothing" sequence can be entered into the memory. To program a dummy sequence, while in Create and at frame 1:

[END SEQ] [ACCEPT]

CREATE 9 fr 1 END of SEQ 9

A Dummy Frame can be entered by pressing the Wait key instead of the End of Sequence key. This is allowed only in frame one.

Go To Key

The Go To key makes it possible to search any sequence, frame, end of show or a different show.

1. GO TO SEQUENCE AND FRAME:

[Go To] [5] [.] [3]

SEQUENCE 1

The 1st number entry is for the sequence, 2nd number entry is for the frame.

[ACCEPT]

SEQUENCE 1 Go To SEQ 5 fr 3

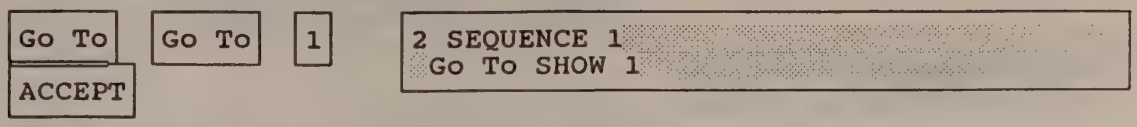
2. GO TO END OF SHOW:

[Go To] [.] [ACCEPT]

SEQUENCE 1 Go To END of SHOW

3. GO TO SHOW NUMBER:

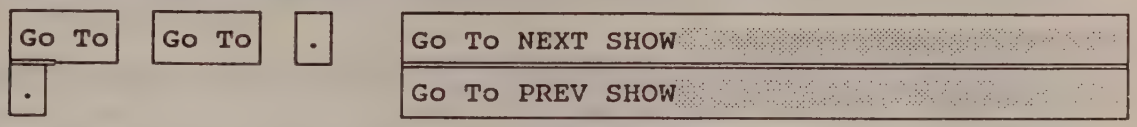
- Press the Go To key twice - displays:



To go to another show, press the Number key, then the Accept key. If no other shows are in memory, show 1 reappears. The Reset key will only reset to the start of the show that appears in the display. Go To key must be pressed twice to access other shows in the programmer.

There is a simple procedure to go to the next or previous show.

- Press the Go To key twice.



Pressing Decimal Point key will rotate between these 2 displays.

3 represents the Show number.

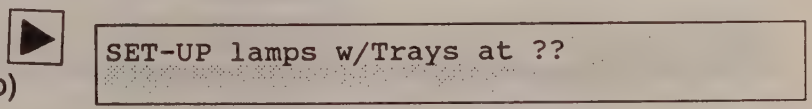
NOTE: when the Go To key is used, pressing Accept will send a time code signal burst out of the time code jack on rear panel.

Set-Up Key

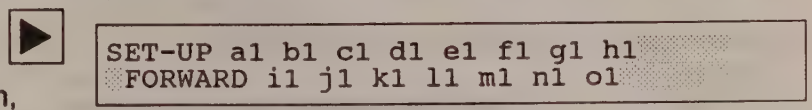
Press the Set-up key to display all the lamps in their setup status.

Press the Escape key to have all trays and lamps return to their original status and positions.

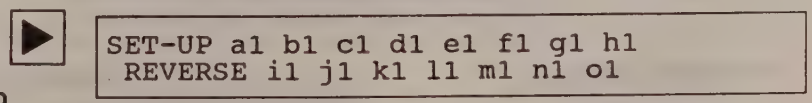
There are many choices when the Set-up key is pressed. First time the Set-up key is pressed the display will be:



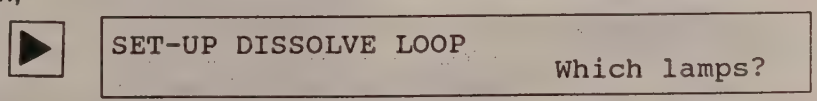
Pressing the Step key (Help) the display will be:



Pressing the Step key again, the display will be:



Pressing the Step key again, the display will be:



Pressing the Step key again, the display will be:

Pressing the Step key will revert back to the original display:

```
SET-UP lamps w/Trays at ??
```

If dissolve loop has been set-up previously, the display will read:

```
SET-UP DISSOLVE LOOP
 ACCEPT to START
```

Manual Operation of Forward,Reverse,Lamps and Auxiliaries

The Pro Sixteen makes these possible by using the Set-up key.

1. TO FORWARD TRAYS:

[ESCAPE] 1. Press the Escape key.
2. Press the Set-up key.

[SETUP]

```
SET-UP lamps w/Trays at ??
```

3. Press the Forward key.

[FORWARD]

```
SET-UP  A1 B1 C1 D1 E1 F1 G1 H1
 FORWARD  I1 J1 K1 L1 M1 N1 O1 P1
```

NOTE: letters represent the projectors and the numbers represent the tray positions. The first 4, A-D are in A bank, E-H are in bank B, I-L are in bank C, and M-P in bank D.

[A2] 4. Press the Projector key(s) whose trays are to be controlled remotely.

Each press of the key increases the tray position by one.

2. TO REVERSE TRAYS:

[REVERSE] 1. Press the Reverse key or Step (help) key.

```
SET-UP  A1 B1 C1 D1 E1 F1 G1 H1
 REVERSE  I1 J1 K1 L1 M1 N1 O1 P1
```

[A2] 2. Press the projector key(s) whose trays are to be controlled remotely. Each press of the key decreases the tray position by one.

3. TO TEST THE AUXILIARY OUTPUTS

[AUX] 1. Press the Aux key.

The display will read:

```
SET-UP AUXILIARY
```

[A] [1] [2] [3]

thru

[D] [1] [2] [3]

2. Pressing any of the A1-3 thru D1-3 projector keys will turn the auxiliary outputs on/off.

Manual Dissolve Operation

Set-up for manual dissolve operation is very simple.

ESCAPE

SETUP

```
SET-UP w/Trays at ??
                    Which lamps?
```

LOOP

```
SET-UP DISSOLVE LOOP
```

Select the projectors that are to be manually controlled by pressing the projector keys (both LEDs will light▲▼).

Example: projector A1 and A2 will make up a two projector dissolve presentation.

A1 A2

```
SET-UP DISSOLVE LOOP
 ACCEPT to START
```

ACCEPT

```
MANUAL  a1  b1
 DISSOLVE
```

The display shows the projectors set-up and their tray positions.

RUN

```
MANUAL  A1  b1
 DISSOLVE
```

When Run key is pressed, the projector that is "on" will be in capital letters and the "off" projector is in small letters.

NOTE: Pro Sixteen will retain the loop assignment until different projectors are selected. Power on/off does not affect the dissolve loop.

If the manual projectors have been selected previously:

Press ESCAPE

SETUP

```
SET-UP w/Trays at ??
```

LOOP

```
SET-UP DISSOLVE LOOP
 ACCEPT to START
```

Now use one of the following steps:

1. If the projectors are to be the same as in the display, press the Accept key and run show.

2. If the projectors are to be other than as in the display, press the keys of the projectors that will be manually operated. Press the Accept key and run show.

NOTE: The lamps of the projectors to first come "on" will be the lower numbered projectors in each bank.

Menu #8 is the Mate-Trac signal choice.

```
MENU #8  Mate-Trac Signal
(1=Standard) 2=SPC      3=+Shutter
```

The choices are (1 = Standard) when using the Four Plus, Two Plus, etc., (2 = SPC) when using only SPC controls, and (3 = + Shutter) with the SAV model of SPC controls only. This menu requires the use of the Accept key.

When the programmer is shipped from the factory the Mate-Trac signal is set to the (1 = Standard) position. To change the setting, step to menu #8, press Number 2 key, and the display will read (2 = SPC). Press Accept key. The programmer will remain in the last status when power is turned on and off to the programmer. It does not default.

NOTE: If the Accept key is not pressed, the current selection will remain.

Some of the SPC Mate-Trac signal features:

1. Fade rates in tenths of a second to 9.9 seconds.
   Use a minimum of .1 second wait between rate changes.
2. Fade to level will be in the hundredths of a step. 10 is 10% and 100 is full brightness.
3. Forward command that advances projectors faster when lamps are on. Does not turn lamp off and on to advance.
4. Fast Advance eliminates the delay time after a lamp fades off. This advances the tray .55 sec sooner than a standard advance. (See page 79.)

Create Another Show

An additional show can be programmed following an existing show or shows in the Pro Sixteen memory. Press the Menu key, either continue to press the Menu key or press the Decimal Point key to display menu #11.

```
ACCEPT to CREATE NEW SHOW 2
```

Pressing the Accept key will enable the creation of a new show. When in the sync or run operations show number will appear in the uppper left corner .of the display.

```
2 SEQUENCE 1
```

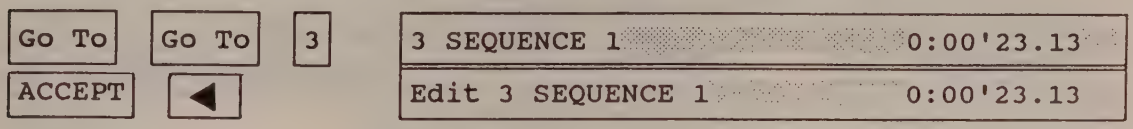
NOTE: If more than one show is in the programmer, Create key is active only while in the last show in memory. Insert key is active in other shows.

Deleting One of Many Shows

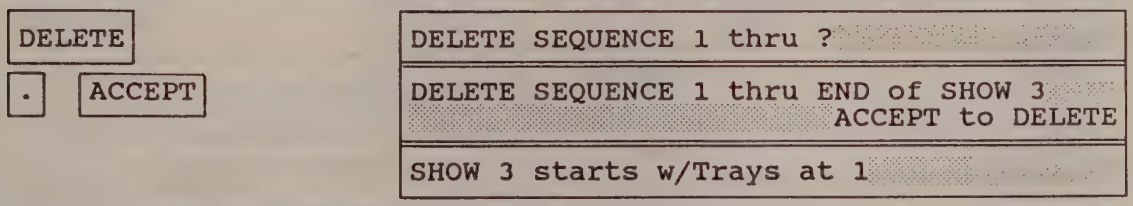
To delete just one of many shows, go to the show to be deleted.

IMPORTANT: Once this show has been deleted it cannot be recovered, be sure to save the show on tape before deleting.

- Press the Go To key twice, enter number of show to be deleted, (ex. 3)



- Press Accept key, press Backspace key to get the first sequence in the display.



When one of many shows is deleted, the following shows will be renumbered by one less. Show 4 will become show 3, etc.

Deleting Multi Shows

When there are many shows in the memory, to delete all of the shows, go to menu #0.

Pressing Accept key will erase the entire memory (all shows). Be sure shows have been saved before proceeeding with this operation.

NOTE: If all shows were accidently erased, immediately go to menu #0, Accept to Un-ERASE all SHOWS is in the display. Press the Accept key to recover all the shows.

Appending Shows

Append is when one show is added to the end of another. This is desired when combining the slides from two shows into one common set of trays. The added show will be assigned new sequence numbers and new tray positions.

Appending shows within the Pro Sixteen is possible after more than one show has been loaded into the programmer. After each show is loaded, a tray start position is automatically assigned to each show.

SHOW 1 starts w/Trays at 1	SHOW 1	SHOW 2 starts w/Trays at 1	SHOW 2	SHOW 3 starts w/Trays at 1	SHOW 3

To append show 2 to show 1, go to show 2, Backspace from sequence 1 of the second show, to the tray start display.

◀	SHOW 2 starts w/Trays at 1
DELETE	SHOW 2 starts w/Trays at 1 APPEND SHOW ACCEPT to DELETE
ACCEPT	Edit SEQUENCE 1 00.21.005

This is the beginning of show 1; there is no longer a tray start display for the old show 2. If there were three shows in memory, show 3 will now become show 2.

Divide One Show into Two or More Shows

This feature is useful when accidently appending two shows or when making two or more shows out of one show.

Step to or Go To the sequence ...

▶	Edit SEQUENCE 45 22:11'00
INSERT	INSERT SEQUENCE 45 Sync Time ??
ACCEPT	INSERT 45 fr 1
NEXT	INSERT 45 fr 1 NEXT SHOW 2 NEW SHOW
ACCEPT	SHOW 2 starts w/Trays at 1

Since the show was divided at Sequence 45, the old sequence 45 sync time of 22:11'00 will become the sync time for the first sequence of show 2.

After changing a show into two shows, if a NEXT SHOW entry is needed in the previous show:

Go to the previous show

Go To Go To 1	1 SEQUENCE 1
ACCEPT	

Go to the end of this show.

Go To . ACCEPT	END of SHOW 1

Insert the NEXT SHOW entry.

INSERT	INSERT 45 fr 1
NEXT SHOW	INSERT 45 fr 1 NEXT SHOW 2
ACCEPT	END of SHOW 2

Backspace to the last sequence (45) and enter a sync time for the execution of the NEXT SHOW entry.

CHANGE ACCEPT	CHANGE SHOW 45 Sync Time ?? ??:??'??

Starting Show with Trays at Different Positions

When creating a large show (many projectors and many slides) it is best to create many shows (modules). The reason for this is to have the programmer working at a faster speed while in editing. When the editing time starts to slow down, use this procedure:

1. Press the tray key. To see all tray positions in the display, press the forward key.

TRAY FORWARD	TRAY A21 B24 C19 D21 E21 F19 G24 H21 FORWARD I24 J19 K21 L21 M 1 N 1 O 1 P 1

This indicates that 12 projectors have been used since four are still at position 1. Record all the tray positions on a sheet of paper (This is a must.)

2. Press the Menu key, press Backspace key until display reads:

MENU ◀	MENU #11 ACCEPT to CREATE NEW SHOW 2
ACCEPT	CREATE SEQUENCE 1 Sync Time ??
PREVIOUS	SHOW 2 start w/Trays at 1
CHANGE	CHANGE SHOW 2 start w/Trays at 1 ??

Change the "Show Starts with trays at" entry to put most of the trays to their nearest position.

Example: Shows using four trays being entered. Tray one starts at 21, tray 2 at 24, tray 3 at 19. and tray 4 at 21.

Enter a show starting with trays at 21. This will put trays one and four at their start position. Tray two will be short and tray three will be past the start postion.

2 1 ACCEPT	SHOW 2 starts w/Trays at 21
▶	Edit SEQUENCE 1 Sync Time ??

Insert into seq. 0, forwards to tray 2 and reverses to tray 3.

INSERT	INSERT 0 fr 1
REPEAT ACCEPT	INSERT 0 fr 1 START REPEAT
FORWARD A2	INSERT 0 fr 1 FORWARD Trays R=1
ACCEPT	INSERT 0 fr 3 R=1
REPEAT 3 ACCEPT	INSERT 0 fr 3 REPEAT ? TIMES
Display will go to Edit.	Edit 0 fr 4 FORWARD Trays R=2
▶	Edit SEQUENCE 1 Sync Time ??
INSERT	INSERT 0 fr 7
REPEAT ACCEPT	INSERT 0 fr 7 START REPEAT
REVERSE A3 ACCEPT	INSERT 0 fr 8 REVERSE Trays R=1
REPEAT 2 ACCEPT	INSERT 0 fr 9 REPEAT ? TIMES
Display will go to Edit.	Edit 0 fr 10 REVERSE Trays R=2
▶	Edit SEQUENCE 1 Sync Time ??
To verify, press: TRAY	TRAY A1:21 A2:24 A3:19 A4:21

Saving Part of a Show

Sometimes a standard opening, or other parts of a show, are reusable in additional shows. There are a few ways to save these segments of a show. These involve deleting part of the show, dividing a show into many shows, deleting one of many shows, etc. A couple of examples:

NOTE: Before doing any of these operations, be sure to first save the entire show on tape.

SEQUENCE 1 --------- 10 --------- 20 --------- 30 ---------- 40

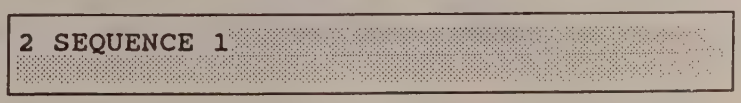
1. If sequences 1 through 10 were to be saved, deleting sequence 11 through the end of the show will leave the sequence 1 - 10 in memory. This can now be saved.

2. If sequences 10 - 20 were to be saved, deleting sequences 21 through end of the show, then deleting sequences 1 through 9, would leave sequences 10-20 in memory (now numbered 1 - 10).

3. Deleting can be avoided when using the divide a show into many shows method. In this operation a new show can be inserted at sequence 11, then show one can be saved. Also a new show can be inserted at sequence 21, then any of the three shows can be saved. If sequence 1-10 and 21 to 40 are to be combined, deleting show 2 would be the answer.

Loading Many Shows

The Pro Sixteen is different from other programmers because more than one show can be loaded into its memory. Standard programmers will change sequence numbering and tray positions when additional shows are appended. The Pro Sixteen loads each show with an assigned show number for each show that is loaded. Each show will start with sequence number 1. Tray start position and all sequence Sync Times do not change. The Go To key when pressed twice, will prompt for a show number. This makes it very easy to go to any show that is in the programmer memory.



The number (2) in the upper left corner of the display identifies the show number. This number is present at all sequences throughout the show.

Loading from Design Sixteen to Pro Sixteen

Up loading to the Pro Sixteen does not require any changes to the Design Sixteen program in memory. Simply connect the output of the Design Sixteen or tape recorder to the input of the Pro Sixteen. Press the Load key on the Pro Sixteen. Next, press the Save key on the Design Sixteen, then the Accept key or play the Design Sixteen memory save tape. The memory from the Design Sixteen will load into the Pro Sixteen. Verify the load by pressing the Verify key on the Pro Sixteen and again the Save and Accept keys of the Design Sixteen. All sequences will have ??? question mark sequence times. See page 41 for syncing show to time code.

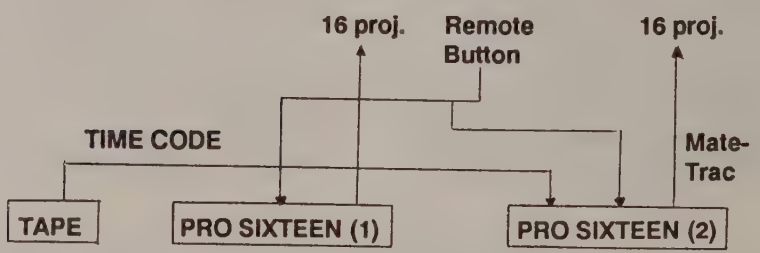
IMPORTANT: The Auto Run key (run sequence) of the Design Sixteen is not useable in the Pro Sixteen. Use Show Preset (page 63).

Loading from Pro Sixteen to Design Sixteen

Before the show in the Pro Sixteen can be transferred to the memory of the Design Sixteen, it is necessary to make the following changes in the Pro Sixteen show.

In the Show Preset sequence (see page 62), all frames must be deleted and the starting tray position must be set to 1. All Sync Times must be cancelled to ??? question marks. The SPC enhanced commands setting in menu #8 must be in the (1 = Standard) position. The Next Show entry must be deleted (if one was programmed). All "do nothing" frames and sequences must be deleted. Once all of these changes have been made, connect the output of the Pro Sixteen to the input of the Design Sixteen. Press the Load key on the Design Sixteen. Press the Save key on the Pro Sixteen, then the Accept key. Memory will be sent from the Pro Sixteen to the Design Sixteen. Verify the load by pressing Verify on the Design Sixteen and once again Save on the Pro Sixteen. Check show and make any minor changes that are deemed necessary.

Programming More Than 16 Projectors



Connect the Time Code signal output of the tape player into two Pro Sixteen programmers.

Connect the output of each Pro Sixteen to Arion dissolve controls.

Connect a common remote control to both programmers.

When using two programmers it is important to keep the sequence numbering the same in each programmer. This requires very little extra effort since a "do nothing" sequence can be entered into the memory of either programmer.

Example:

Pro Sixteen (1)

```
SEQUENCE 1 fr 1
 at 3s rate                wait 2 sec
```

Pro Sixteen (2)

```
SEQUENCE 1 fr 1
                          END of SEQ 1
```

In this example there is an action in Pro Sixteen (1) but Pro Sixteen (2) has a "do nothing" sequence. To program the "do nothing" sequence while in Create, press only the End of Sequence key and then the Accept key.

By keeping the sequence numbering identical in both programmers, the "Go To" keys can be used to find a common position in the show. Also, when syncing to the time signal, both programmers will show identical sequence numbers. This is an advantage when a common remote control is plugged in both programmers requiring the push of only one button while syncing the show.

Two remotes can be used if the entry times of each programmer is to be different although sequence numbers are identical.

If one of the sequences in either programmer is to execute at a later time, do not change the sequence Sync Time. Instead, insert a "wait time" only frame into the first frame of that sequence.

Example:

Pro Sixteen (1)

```
SEQUENCE 3 fr 1
 at 2s rate                wait 4 sec
```

Pro Sixteen (2)

```
SEQUENCE 3 fr 1
                           wait 2 sec
```

Notice that the Pro Sixteen (2) has nothing but a wait time. This will delay the execution of frame 2 which was frame 1 before the wait only was inserted.

Always sync the programmers to the earlier Sync Time and then insert a delay frame into the other programmer. It is much easier to Edit by keeping the sequence Sync Times the same in both programmers.

When using two Pro Sixteens, use one for slide projectors and the second for auxiliary and lighting effects. First program the projectors, then sync to the show tape. Next, the second unit for auxiliary lighting effects would be programmed and synced to the audio tape separately. Using this method makes it much easier to Edit and sync each part of the show. In this case it is not necessary to maintain same sequence numbering throughout both programmers.

Print Show

The Print key enables the printing or listing of the show. To Print the show, it is necessary to go to Menu #5 and select the baud rate of the printer that is connected to the Pro Sixteen. Next go to Menu #6 and select the RS-232 port to (1=printer).

Go to the sequence that is going to be the start of the printout (if entire show, go to sequence 1), press the Print key, display reads:

PRINT

```
PRINT SHOW 1
 ACCEPT to START
```

The Pro Sixteen sends out the data when the Accept key is pressed.

ACCEPT

```
PRINT SHOW
 ACCEPT to STOP          SEQUENCE 20 fr 2
```

To stop printing, press the Accept key.

To ESCAPE from printing, press the Print key. The Pro Sixteen will return to the edit mode.

Printing will continue if the Accept key is pressed again.

To print a PART OF A SHOW, go to the sequence that is the start of the printout. Press the Print key, press Accept to start and stop the printing.

```
PRINT  SEQUENCE 5 thru END OF SHOW
 ACCEPT to START
```

If the printer does not operate, check printer cable and settings, menu #5 and #6.

NOTE: In the printout, capital letters identify an "on" and small letters identify an "off".

Example: A1 = projector lamp "on", b2 = projector lamp "off".

NOTE: If printer is connected while programming, editing, etc. be sure to set printer to "off line" mode.

List Show

To list a show to a computer monitor, go to Menu #6 RS-232 port. Select (2=Computer). Connect the RS-232 cable.

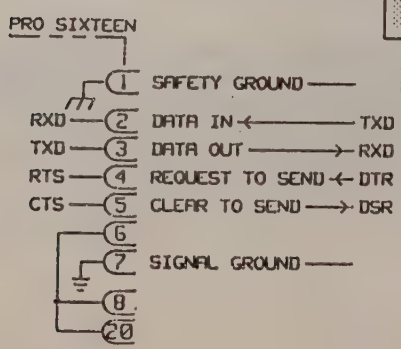
Go to the sequence that is going to be viewed (if entire show, go to sequence 1),

PRINT

```
LIST SHOW
 ACCEPT to START
```

The Pro Sixteen sends out data when the Accept key is pressed. All operations are the same as the above print operation.

```
LIST SHOW
 ACCEPT to STOP
```



Printer Receptacle

Displays - Description

This sequence has not been synced to Time Code.

```
SEQUENCE 8                Sync Time ??
```

Pressing Reset, this time display indicates that the internal clock is (2=ON) and the sequence has a sync time.

```
SEQUENCE 1                0:00'05
```

This sequence will execute when pressing the Run or the Remote key.

```
SEQUENCE 3                LIVE CUE
```

This sequence has no Sync Time and is in the Edit mode.

```
Edit SEQUENCE 8      Sync Time ??
```

This sequence has a Sync Time.

```
Edit SEQUENCE 7                    0:00'12
```

END of SEQ indicates the last frame in that sequence.

```
Edit 6 fr 3          fade lamps
 at 2s rate                END of SEQ 6
```

This display and the next display are one entry just before Repeat # Times entry.

```
Edit 3 fr 2          fade lamps        R=2
 at 15s rate  TO ADV
```

The frame is separated into two frames to allow changing of the wait time since it will be executed at the end of the "Repeats". Remember that only the first entries (R=1) of a Repeat segment can be changed except for this wait time since it occurs only once and that is at the very end of the "Repeats".

```
Edit 3 fr 3                              R=2
                          wait 1 sec
```

When playing time code from tape,if Menu #3 is set to (1) SMPTE, display reads SMPTE (30 frames). If set to (2) EBU (25 frames) it reads EBU.

```
SEQUENCE 1           SMPTE      0:04'60
```

If at a LIVE sequence, when time code continues from tape, the time will continue to be displayed.

```
SEQUENCE 10          LIVE CUE   0:21'30
```

If the Run key is pressed while the frames are running the display will count down in hundredths of a second.

```
SEQUENCE 3 fr 2
                          wait 1.82 sec
```

Display Messages

When Create key is pressed change wait to an End of Seq. See page 55.

```
No "END of SEQ 2' entry,
press <- to locate and correct ...
```

When Create key is pressed, see page 55.

```
No frames in SEQUENCE 2 ...
```

When Create key is pressed this show is not the last show in memory or the show has a NEXT SHOW entry.

```
Use INSERT for SHOW 4
or MENU #11 to CREATE NEW SHOW 5
```

When changing a group of sequence sync times and the times and the Accept key was pressed rather than the Step or Backspace key.

```
CHANGE SEQUENCE 1 thru 9
press <- or -> to change 0:00'00.02
```

After system reset button was depressed.

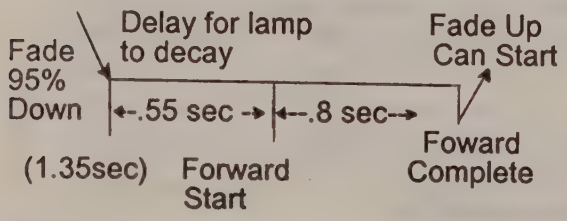
```
Lost SYSTEM MEMORY ...
ACCEPT to Continue
```

Pressing Accept key will return original software to system. If system had been updated via disc, see page 81, Loading New System.

Difference between a TO ADV and a FA ADV

Example: 2 second fade down

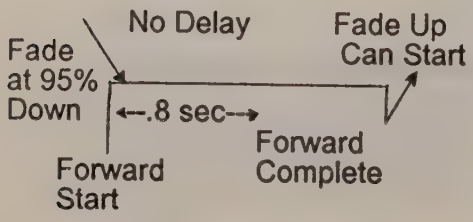
Standard Advance (TO ADV)



The projector with a fast advance is available for reuse sooner. This allows faster cycling thru many slides.

NOTE: Forward delay is changed from .55 seconds to .8 seconds for S-AV because of the 24 volt lamps.

Fast Advance (FA ADV) (For use with late version SPCs only)



Disadvantage: next visual may appear due to lamp not being completely off when shutter reopens.

Fast Advance

Fast Advance feature is for use with Arion SPC (Single Projector Controls) only.

To program a Fast Advance:

1. Step to menu #8

```
MENU #8  Mate-Trac Signal
 (1=Standard)  2=SPC  3= Shutter
```

2. Select 2=SPC or 3=+Shutter.

When at the TO ADV entry, press the

TO ADV	key more than once.

```
CREATE 1 fr          fade lamps
 at 2.5s rate   FADV
```

The display will alternate between TO ADV and FADV. Selecting FADV will cycle the tray without a delay after the lamp fades off. (See page 79.)

Updating System Software of Pro Sixteen

The programmer system software will be enhanced from time to time when Arion makes the decision that an update would be advantageous to the end user.

This update can be accomplished by either using a computer disk or a cassette tape. The disk option is the preferred method since it takes less time and is not as apt to read errors.

Procedure:

Disk method:

1. Connect a RS-232 cable between the Pro Sixteen and the computer
2. Boot up the computer - insert disk in floppy disk drive
3. Power up the Pro Sixteen
4. Follow instructions on Loading New Version of System. These are supplied with the updated disk.

Tape Method:

1. Connect cable between sync output of the recorder to the sync input of the Pro Sixteen
2. Power up the Pro Sixteen
3. Follow instructions on Loading New Version of System. These are supplied with the updated cassette tape.

Loading New Version of System

Loading a new version of system is performed only when an update is supplied by Arion Corporation. This update will enhance the operation or features of the Pro Sixteen. Before this operation is undertaken, be sure that the show memory has been saved on disk or cassette tape. This operation requires that all shows in the Pro Sixteen memory be erased. When a new version of the system is received from Arion, the following procedure enables the updating of the Pro Sixteen operating system.

1. [SAVE] Save shows.

2. [ERASE] Erase all shows.

3. Connect computer to the RS-232 receptacle. If using tape cassette, connect to the Pro Sixteen IN jack.

4. [LOAD]

5. [ACCEPT] (wait a moment)

6. Send data (new version) to Pro Sixteen.

```
MENU #12
 ACCEPT to LOAD NEW VERSION of SYSTEM
```

```
RS-232/LOAD SYSTEM
```

```
RS-232/LOADING SYSTEM    # block(s)
```

- When a new version is loaded, the old system version is automatically erased.
- After a new version of the system has been loaded, it is necessary to verify the system update with disk or tape copy.

1. [ESCAPE]

```
                CREATE-LOAD-PLAY
 PRO SIXTEEN VERSION                XXXX
```

A new version number will appear.

2. [MENU]

[VERIFY]

3. [ACCEPT]

4. Feed disk or tape into Pro Sixteen.

5. If system is correct:

If system is not correct:

```
MENU #1
 PRO SIXTEEN Version ... 2.34 (XXXX)
```

```
MENU #13
 ACCEPT to VERIFY NEW VERSION of SYSTEM
```

```
RS-232/VERIFY SYSTEM
```

```
RS-232/VERIFYING SYSTEM
```

```
        CREATE  -  LOAD  -  PLAY
PRO SIXTEEN          Version 2.34
```

```
RS232/REVERIFY SYSTEM
```

Follow preceding steps to verify again. If unsuccessful, it may be necessary to reload the new version of the system.

Saving a Version of the System

Sometimes it is wise to save a version of the operating system since it is easy to misfile the original copy.

To save the operating system it is necessary to hook up either to the serial port (RS-232) of the computer or the input of a cassette recorder.

Once again it is first necessary to save all shows in the operating system. After saving shows, it is necessary to erase all shows in memory of the Pro Sixteen. After these operations have been completed:

Saving to Disk

1. ESCAPE

```
        CREATE  -  LOAD  -  PLAY
PRO SIXTEEN          Version 2.34
```

If saving to disk, press Menu key until Menu #6 appears.

MENU
1

```
MENU #6  RS-232/LOAD-SAVE-VERIFY
                (1=ON)  2=OFF
```

2. SAVE

```
MENU #14
 ACCEPT to SAVE NEW VERSION of SYSTEM
```

3. ACCEPT

```
RS-232/SAVE SYSTEM  164 block(s)
```

4. Start the disk to record the operating system data.

Once again it is first necessary to save all shows in the operating system. After saving shows, it is necessary to erase all shows in memory of the Pro Sixteen. After these operations have been completed:

Saving to Tape

```
        CREATE  -  LOAD  -  PLAY
PRO SIXTEEN          Version 2.34
```

1. MENU 1 4

```
MENU #1
 PRO SIXTEEN        Version 2.34  (XXXX)
```

2. SAVE

```
MENU #14
 ACCEPT to SAVE NEW VERSION of SHOW
```

3. ACCEPT

```
SAVE SYSTEM          164 block(s)
 ACCEPT to START
```

4. Start recorder in record mode.

5. ACCEPT

```
SAVING SYSTEM        ### block(s)
```

After save has been completed, verify the save of the system data. Use Verify Systems procedure. If it does not verify, a new save may be necessary.

Recover Show (lost by power interruptions)

When a power interruption occurs, the memory is protected by a battery back up system in the programmer. Since power interruptions are of infinite variations, there is a remote possibility that the show memory could be lost. If this should happen, follow these steps to recover the show.

1) After power is restored:

```
      CREATE  -  LOAD  -  PLAY
PRO SIXTEEN          Version 2.34
```

2) Press the Menu key and check to see that every menu is set to the proper mode for the show.

MENU

3) When at menu #0:

```
MENU #0
 ACCEPT to UN-ERASE all SHOWs?
```

This will return the original show to the programmer memory.

```
SEQUENCE 1
```

System Erase

As is the case with all equipment incorporating microprocessor electronics, extreme power line disturbances or static discharges could cause the programmer to cease operation. In the very unlikely event that the programmer succumbs to such a disturbance, use the tip of a pen to depress the system reset button on the back panel.

NOTE: Only use this button when the programmer ceases to operate after turning the power switch off and on. When you erase the system software, the programmer will use the operating system version that was installed in the programmer at Arion.

If you have not updated the programmer operating system software since it was shipped from Arion, the system erase button will erase your show data, but have no effect on the way the programmer operates.

When the Pro Sixteen is turned on again, the display will show a top row of blocks for a few seconds. After this delay, the display will read:

```
LOST SYSTEM MEMORY ...
 ACCEPT to continue
```

ACCEPT

```
      CREATE  -  LOAD  -  PLAY
PRO SIXTEEN          Version 2.34
```

The programmer will be operating with the original version soft-ware. If a new version of software is available, see page 78 for Loading New Version of System.

Manual Operation of One to Four Projectors

When standard one projector or dissolve operation is to be used, the following programs offer a quick solution. The programs can be stored in the Pro Sixteen as different shows for quick retrieval. Enter each module as a different show, then use the Go To key for access. See page 66.

ONE PROJECTOR DISSOLVE SHOW

SEQ 1 LIVE CUE

fr 1 START REPEAT
fr 1 A1 on rate End Seq

SEQ 2 LIVE CUE

fr 1 FORWARD A1 wait .05 sec
fr 2 REPEAT # TIMES End Seq

SEQ 3 LIVE CUE

fr 1 A1 off rate End Seq

TWO PROJECTOR DISSOLVE SHOW

SEQ 1 LIVE CUE

fr 1 START REPEAT
fr 1 A1 on rate End Seq

SEQ 2 LIVE CUE

fr 1 A2 on A1 off rate End Seq

SEQ 3 LIVE CUE

fr 1 A2 off rate wait .05 sec
fr 2 REPEAT # TIMES End Seq

THREE PROJECTOR DISSOLVE SHOW

SEQ 1 LIVE CUE

fr 1 START REPEAT
fr 1 A1 on rate End Seq

SEQ 2 LIVE CUE

fr 1 A1 off A2 on rate End Seq

SEQ 3 LIVE CUE

fr 1 A2 off A3 on rate End Seq

SEQ 4 LIVE CUE

fr 1 A3 off rate wait .05 sec
fr 2 REPEAT # TIMES End Seq

FOUR PROJECTOR DISSOLVE SHOW

SEQ 1 LIVE CUE

fr 1 START REPEAT
fr 1 A1 on rate End Seq

SEQ 2 LIVE CUE

fr 1 A1 off A2 on rate End Seq

SEQ 3 LIVE CUE

fr 1 A2 off A3 on rate End Seq

SEQ 4 LIVE CUE

fr 1 A3 off A4 on rate End Seq

SEQ 5 LIVE CUE

fr 1 A4 off rate wait .05 sec
fr 2 REPEAT # TIMES End Seq

Dissolve Two Projectors Continuously

(80 slides in each projector)

SEQ 1 sync time

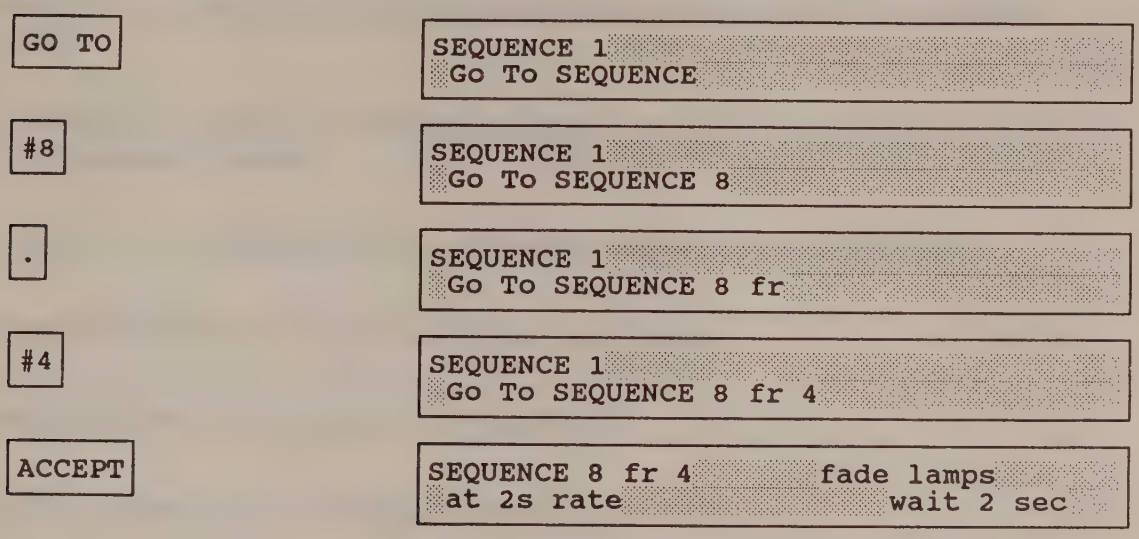
fr 1 START REPEAT Accept
fr 2 A1 on 1 sec rate wait 2 sec Accept
fr 2 A1 off A2 on 1 sec TO ADV wait 2 sec Accept
fr 3 Repeat 79 times wait 2 sec Accept
fr 161 A2 off 1 sec rate TO ADV wait 2 sec Accept
fr 162 Home Trays
fr 163 Next Show Accept

SMPTE and EBU Interface

The Pro Sixteen can be interfaced to auto locate computers, tape recorders, video, etc. via the time code output.

To generate a burst of SMPTE or EBU time code, first press the Go To key. Next select the sequence and frame number. Pressing the Accept key will send out a burst of SMPTE or EBU which will enable auto locating of the external device.

Example: Sync to sequence 8 frame 4.



The sync time for this sequence and frame will be generated out of the time code output. If going to a sequence only, press Accept after the sequence number selection.

Audible Sync Time

For live performances or other special applications, the Pro Sixteen sends out an audio burst when pressing the Run key. This tone can be recorded onto another track of the show tape and monitored during playback.

Sync time output is from the time code output located on the rear panel.

GLOSSARY

AUXILIARY - to close and open relay contacts to control a device - tape recorder, power control, light dimmer, etc.

CHANGE - to correct or modify an entry without deleting.

COPY - to swap the entries from one bank to another bank of projectors.

CREATE - to enter sequences, frames, etc. to create a show into the programmer memory.

CREATE NEW SHOW - to enter sequences, frames, etc. for an additional show(s) into the programmer memory.

DELETE - to remove frames or sequences from the Pro Sixteen show memory.

DUMMY SEQUENCE - a sync point without any frames.

END SEQUENCE - the last entry in a sequence.

FADE - process of a lamp turning on or off.

FADE RATE - the time it takes a projector lamp to fade completely on or off.

FADE TO LEVEL - to fade a projector lamp to one of many absolute levels of brightness. (1=STANDARD) in 10 levels and (2=SPC) in 100 levels.

FLASH RATIO - the amount of time a lamp is to remain on and off while flashing.

FORWARD - to advance a projector tray one position.

FRAME - a part of a sequence consisting of lamp, etc. entries, and terminated with a wait time.

GO TO - to find any show, sequence, or frame in the programmer.

HOME TRAYS - to reset projector trays to their starting positions only.

INSERT - to enter a frame or sequence within the show memory.

LIVE PRESENTATION - "LIVE CUE" sequences run manually from the Pro Sixteen memory.

LOAD SHOW - to copy a show program that has been stored on tape or disk back into the Pro Sixteen for editing or presentation.

LOAD SYSTEM - to copy the system data that has been stored on tape or disk, thus updating is accomplished in the field.

LOOP - to repeat the actions programmed in a series of frames many times. Tray advances do not happen until the last cycle of the loop.

MATE-TRAC - the projector synchronizing signal sent out to tape or dissolve controls from the Pro Sixteen.

MENU - list of additional operations.

MIXED PRESENTATION - a presentation controlled by both tape and manual execution.

NEXT SHOW - to reset memory to start of next show. If only one show is in memory, reset to the start of the show.

NO ADVANCE - to inhibit the advance of trays of the projectors that have faded off.

PRINT - to make a hard copy of the show program via RSC-232 output.

REPEAT - to make the actions programmed in a series of frames run many times. Projectors can advance in each cycle of the repeat.

REVERSE - to backup a projector tray one position.

SAVE SHOW - to send out show data for storage on tape or disk for safekeeping.

SAVE SYSTEM - to send out the system data for storage on tape or disk for safekeeping.

SEQUENCE - made up of one or many frames.

SEQUENCE "0" ZERO - a show preset sequence for tray start position and other entries.

SHOW IDENTIFIER - automatic entry in first step of memory that identifies the show number and the tray start position.

SHOW PROGRAM - all sequences that have been entered into the programmer memory.

SHOW PROGRAM MEMORY DUMP - a show program that has been stored on tape or disk.

SHOW TAPE - a tape that has Mate-Trac or SMPTE recorded alongside the sound track.

STANDARD FADE RATES - Hard cut (0), soft cut (.2), 1, 2, 3, 4, 6, 8 and 16 seconds. Can be proceeded by a .05 wait time.

STANDBY - to abort Mate-Trac output of the Pro Sixteen.

START FLASH - to preset flash ratios to projector lamps that are to flash.

STATIC ELECTRICITY - can erase or cause the memory to lock up; use anti-static spray on area carpet.

STOP FLASH - abort the flashing mode of the projector lamps that have been flashing.

SYSTEM VERSION - date of software operating the programmer.

TIME CODE SIGNAL - there are two types of time code. SMPTE is 30 frames per second and EBU is 25 frames per second.

TO ADVANCE - projector will tray cycle after lamp fades off.

TRAY - display projector tray positions.

VARIABLE FADE RATES - fade rates that are not standard. These rates must be proceeded by a wait time of .1 second or greater unless the same rate or in the previous frame.

VERIFY - to check the accuracy of a show recorded on tape by comparing to the show program in memory.

WAIT - last entry of a frame and is the length of time before the automatic execution of the following frame.

INDEX

Adding a frame p9, 49
Animations p25
Appending shows p71
Audible sync time p87
Audio tape p56
Auxiliaries p26, p67

Cancel sync times p47
Change key, how to use p8, p56
" End of Seq to a Wait p56
" Fade to Level p20, p56
" rate time p8, p56
" many sequence sync times p46
" wait time p8, p56
" # Times p16
Copy/Swap p31
Create another show p69
Create key p55
Creating a show p3
" sequence times only p42

Delete key p11, p51
Deleting frames p54
" sequence p37
" shows p70
Displays p55, p78, p79
Dissolve Loop manual p68
Dittos p12
Dividing a show p71
Dummy sequence or frame p65

EBU p37
Editing p8-11
Editing sync time p43
Enhanced Mate-Trac p69
Entering sync times p41
" sequence sync times p45
Erase show p65

Fade to level p20
Fast Advance p79, p80
Forward trays p28, p67
Fine tuning sequence time p44

Gap time p44
Generate time code p40
Go To key p65, p66

Home p60

Insert p9
" new frame at end of a seq p49
" a new seq into the show p49
Internal Clock p63
Introduction p1

Joining sequences p52

List show p77
Live cue p48
Loading from Design Sixteen p75
" show p36
" many shows p74
" system p81
Loops p17, p64

Manual operation p67, p84
Mate-Trac signal p57, p69
Menus p33, p34
Messages while in Create p55
Mixed Presentations p49
Multi shows p62

Next show p60

Playing show p61
" " with Internal Clock p63
Playing show - Auto Run p62
Print p77

Recover show p83
Repeat p14, p64, p84
Resync sequences p46
Reverse trays p28
RS-232 p77, p80-81

Save system p82
Selecting outputs p39
" time code p39
Set-up p32, p66, p67
Set-up Key p66
Show Presets p63
SMPTE p37
SMPTE or EBY Interface p86
Standby p54
Storing on Tape p35
Sync repeats p46
" sequence p42-43
" time p45
System reset p83

Test Auxiliary p67
Time Code p37
Tray changing p60
Tray key p60
" start p63, p72

Unerase show p65
Update system p80
Using Mate-Trac p57
" Time Code p57

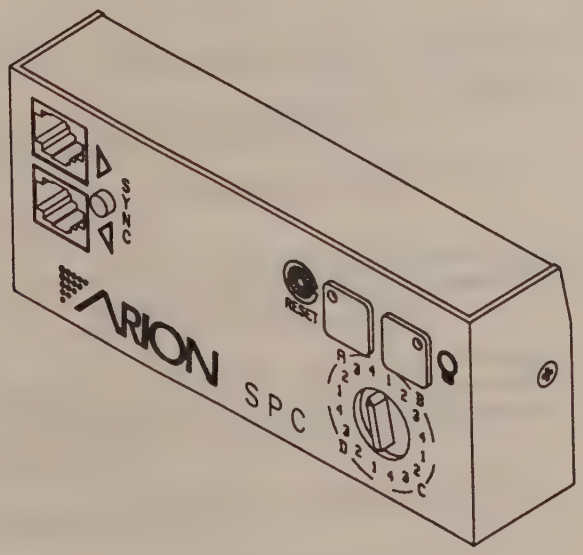
VIDEODISC PLAYER - Controlling
see Pro Sixteen-V Supplemental Manual

Zero wait times p65

OPERATING INSTRUCTIONS

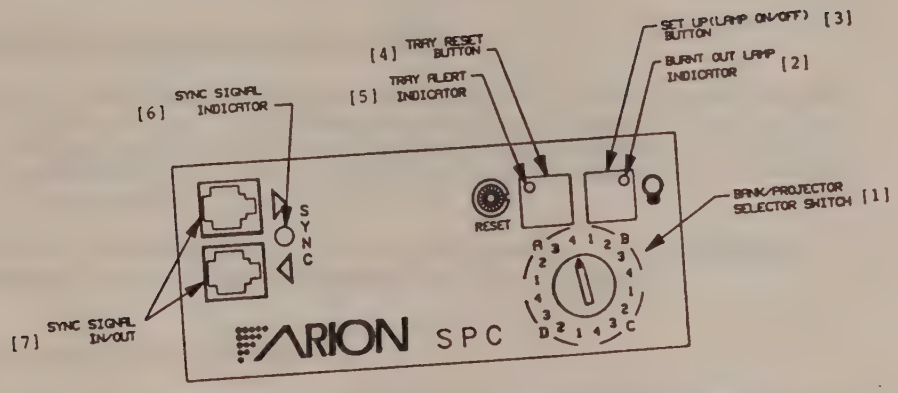
ARION

SINGLE PROJECTOR CONTROLLER
FOR
KODAK EKTAGRAPHIC III PROJECTORS



Arion Corporation 701 S. 7th Street Delano, MN 55328 U.S.A. 612-972-3351 Fax: 612-972-3524

CONTROLS AND INDICATORS



1. **BANK AND PROJECTOR NUMBER** selects the bank and projector number setting.

2. **LAMP ALERT INDICATOR** - flashes for a burned-out lamp and when the projectors power-selector switch is mistakenly set to high instead of fan position.

3. **SETUP** - turns on and off the projector lamp for alignment and focusing when the SPC is not receiving Mate-Trac sync signal.

4. **RESET** - finds tray position 1 when the SPC is not receiving Mate-Trac. While the SPC receives Mate-Trac, reset is disabled except when a possible tray problem lights the tray alert indicator. Then reset takes the tray to its correct position.

5. **TRAY ALERT INDICATOR** lights steadily when the SPC tray position may be wrong because the tray has been moved by hand or is jammed. It also lights when the SPC is powered up while receiving Mate-Trac. It goes out as soon as the SPC gets tray position 1 from the Mate-Trac sync signal.

   TRAY ALERT INDICATOR flashes when the SPC tries to cycle a missing or poorly seated tray.

6. **SYNC** - lights while SPC receives a good Mate-Trac sync signal.

7. **< OUT** modular telephone jack - output for Mate-Trac sync signal.
   > IN modular telephone jack - input for Mate-Trac sync signal.

ARION PROGRAMMER COMPATIBILITY

The SPC plays back shows programmed on the Arion Two Plus, Design Sixteen, 828 Memory Programmer, CAMI, and Kodak Ektagraphic Programmable Dissolve Controls.

When using the SPC intermixed with the TWO PLUS, FOUR PLUS, EXPRESS TWO or FOUR, 828 or Kodak Programmable Dissolve Controls, be sure to follow the hook-up instructions found on page 6.

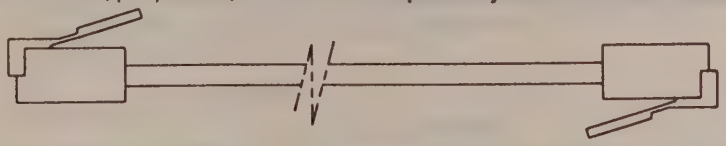
AVL PROGRAMMER COMPATIBILITY

The SPC - working with the Arion Converter - can be programmed using the AVL Show Pro 3, Show Pro V, and programmers using AVL Procall Versions 5 through X. The Arion Converter, catalog number 320, receives AVL Posi-Trak and sends out an enhanced Mate-Trac sync signal to the SPC. The SPC emulates AVL Dove fade curves and projector effects.

Once the enhanced Mate-Trac is recorded on the sync track, the SPC will reliably playback your show without AVL programmer or Arion Converter.

CABLING: SPC-TO-SPC

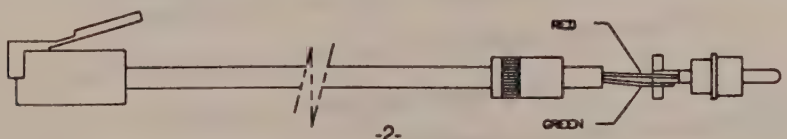
Modular-to-modular line cords link SPCs together. They also link the Arion Producer cassette recorder to the SPC through the Producer's balanced sync out. These cables have 4 conductors, terminating in 6 posibion 4 contact RJ14C squeeze tab connectors. Computer modems, peripherals, and the U.S. telephone system use these cords.



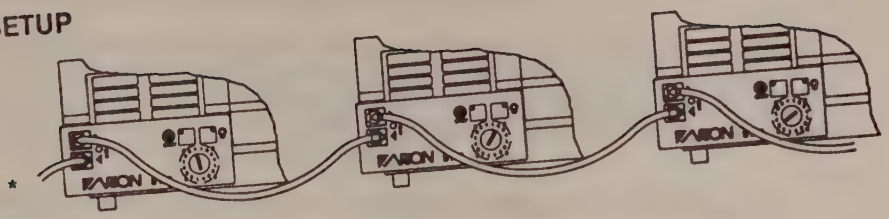
Cords are available from your Arion dealer and Radio Shack/Tandy stores. Radio Shack catalog number: 279-374 (12 ft/3.7 m), 279-390 (5 ft/1.5m).

CABLING: MATE-TRAC SOURCE-TO-SPC

A special cable may be needed to connect your Mate-Trac source - such as a tape player or programmer - to the first SPC. This cable will have a standard audio plug on one end and a 6 position 4 contact RJ14C connector on the other end. Buy audio plugs at an electronics or Radio Shack/Tandy store.



SETUP



Setup with projector switch in the off position.

If using a programmer, put it into standby. SPCs receiving home position Mate-Trac always return their trays to tray start position 1 or 0.

1. Plug SPC into the 2 receptacles located on the back of the EK III just below the fan grill. Align the SPC 7 pin and 8 pin connectors with the remote-accessory and secial-application receptacles at the rear of the projector. Press the SPC firmly against the projector.

2. Set the rotary switch on the SPC to the proper projector assignment.

3. Plug the modular end of the Mate-Trac source-to-SPC cable into the Mate-Trac in jack on the first SPC. Plug the other cable end into the Mate-Trac source. Connect remaining SPCs using modular-to-modular cables. Connect cable from the Mate-Trac out jack of one SPC to the Mate-Trac in jack of the next SPC.

4. Place trays on projectors.

5. Switch the projector switch to the fan position.

   SPCs will forward their trays to start position 1 or 0.

6. Press projector forward or reverse buttons as needed to drop alignment slides into gates. Press the setup button to turn the projector lamp on/off when focusing and aligning the projector.

   SPC tray alert indicator will light when trays are moved by hand.

7. *After setup is complete, connect the cable from either your tape recorder or your programmer to the first SPC. (TD power control if one is in your setup.)

8. Press reset key to send trays to the start position of the show.

   If using a programmer, turn Mate-Trac back on.

   Projectors are ready when all SPC lamp and tray alert indicators are off.

9. Play show.

ZERO POSITION SENSING FOR POSITIVE TRAY SYNCHRONIZATION

The SPC uses the Kodak Ektagraphic III's zero-position switch to positively find correct tray positions. Whenever the SPC powers up without Mate-Trac sync signal or receives the tray start position from the Mate-Trac sync signal, it cycles its tray until the tray will seek its start position.

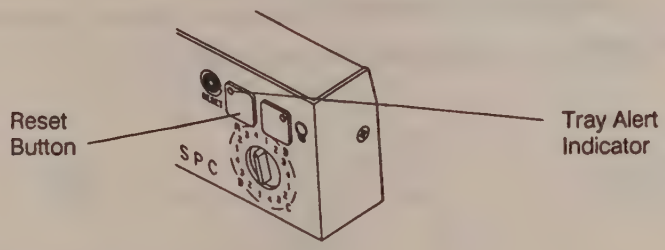
Important: Do NOT use 140 slide trays!

TRAY ALERT INDICATOR AND RESET BUTTON

The tray alert indicator lights steadily whenever projector forward and reverse buttons have been activated to change the tray position. It also lights when the tray jams. It lights when SPC powers up while receiving Mate-Trac sync signal and stays lit until the SPC receives its tray start position from the Mate-Trac sync signal. The tray alert flashes when there is a missing or poorly seated tray.

Pressing the Reset button sends the tray to its start position when the SPC is not receiving Mate-Trac sync signal.

While receiving Mate-Trac sync signal the Reset button is disabled - except when the tray alert indicator is lit, indicating tray problems. Pressing the Reset button will cycle the tray until the 0 tray position is sensed, then the tray will cycle to where Mate-Trac sync signal says it belongs.



RESTORING SYNCHRONIZATION

1. If the SPC tray alert indicator is on, there are two ways to restore the tray into sync.

   a. If you know the show, cycle the tray (using the projector forward or reverse buttons) to the right position and let the show finish with the alert light on.

   b. Press the tray Reset button, the tray will go to the zero position and then to the proper position per the Mate-Trac sync signal,. This may take longer to get back into sync.

2. During a show, if power is lost to the projector only: after power is restored, the SPC tray alert indicator will be lit. Since the tape recorder did not lose its power and continued to play, some of the sync signals were lost by the SPCs. To restore synchronization of the show:

   a. Stop the tape.

   b. Press the tray Reset button.

   c. While trays are cycling, play a short portion of the tape and stop the tape.

   d. After the trays have gone to the zero-position, the trays will then seek their proper positions per the Mate-Trac sync signal.

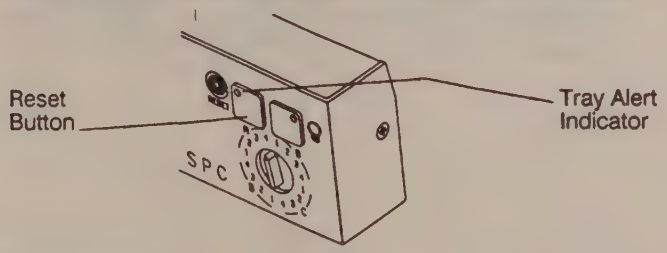
   e. Once all trays have stopped cycling, continue to play the tape.

3. If power is lost to both the projectors and the tape player:

   a. The show is likely to be in sync when the projector power is restored.

   b. Since losing power stops the tape player, it is necessary to start the tape.

   c. If not in sync, manually reset the few trays and continue with tray alert lights on.



PRINCIPLE OF OPERATION

If SPC is receiving Mate-Trac sync signal:

1. The tray Reset button is disabled unless power is lost. When projector power is turned off, turning on the power to the projector will cause the tray alert light to come on and the trays remain in their current position.

2. Whenever the tray LED is lit, pressing the tray reset button causes the trays to seek zero.

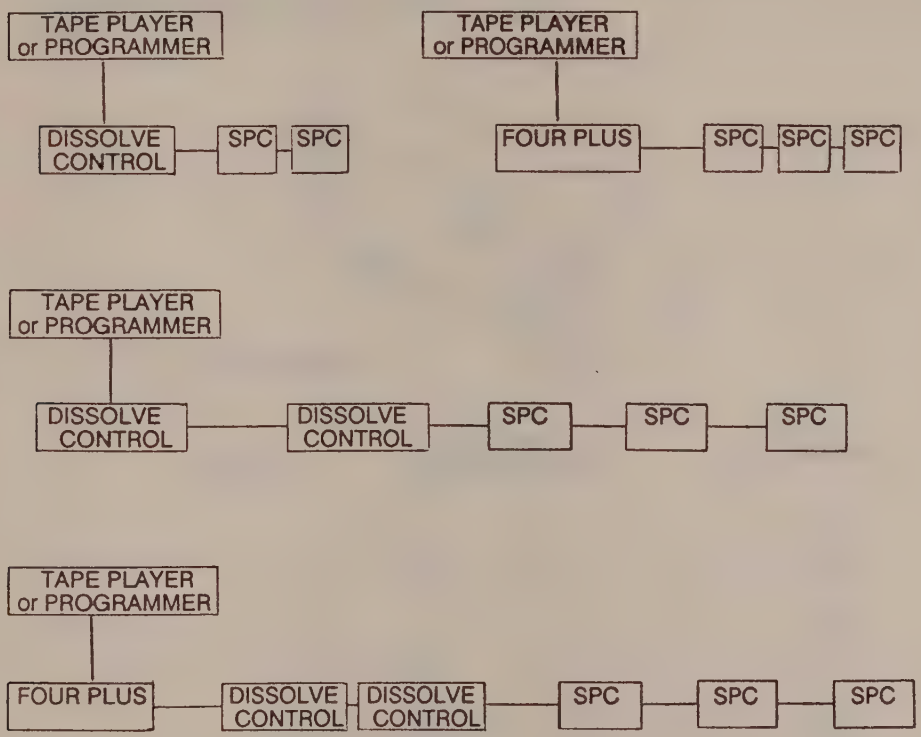
If SPC is **not** receiving Mate-Trac sync signal when projector power is lost:

1. When projector power is restored, the trays will automatically seek the zero position.

HOOK UP

Mixed models of dissolve controls

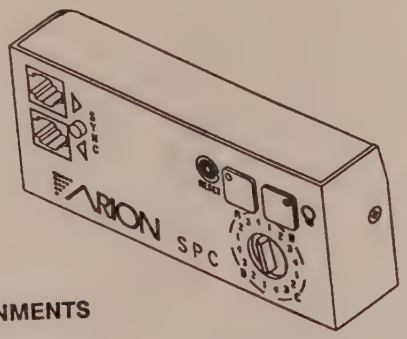
When using Arion, Kodak, or 3M dissolve controls with the SPC single projector controls, all models must be connected together as in the following examples:



In all of these examples, you will note that the SPCs are not connected between the other models, but are in the trailing position of the hook-up.

USING THE SPC WITH THE ARION CONVERTER

When playing AVL show tapes, set the SPC projector select switch according to the projector assignment chart shown below.



PROJECTOR ASSIGNMENTS

AVL DOVE NUMBER	AVL PROJECTORS LAMP COMMANDS	ARION SPC SETTING
1	1-L	A A1
	1-C	B A2
	1-R	C A3
2	2-L	D B1
	2-C	E B2
	2-R	F B3
3	3-L	G C1
	3-C	H C2
	3-R	I C3
4	4-L	J D1
	4-C	K D2
	4-R	L D3
5	5-L	M A4
	5-C	N B4
	5-R	O C4

This chart shows the typical AVL 3 projectors (1-Dove) per screen confirguration. The projectors could also be numbered 1 through 16 starting at the top of the chart.

* When using 2 projectors per Dove (sequence switch set to position 2) these are the settings for each screen area.

PROJECTOR POWER CONTROL MODULE

Principle of Operation:

Operation of the Projector Power Control Module is controlled by its microprocessor software which is unique in the slide projection field. During a slide presentation the "smart" software will control power to the projectors. Under these two conditions its power is "on: or its power is "off". From 1 to 4 projectors can be controlled.

CONDITION ONE

Power to the Projector Power Control Module circuit board is "on".

As soon as the Projector Power Control Module receives Mate-Trac sync signal, the power to the projector will turn on automatically. Projector LEDs will become green and standby LED goes off.

Also, if trays are at home and Mate-Trac sync signal is not present, the power to the projectors will automatically go "off". Standby LED will become yellow and projector LEDs will go off.

When Mate-Trac sync signal is not being received by the Projector Power Control Module, the power to the projectors can be turned on/off manually. (Eliminates wear and tear on projectors and reduces noise).

CONDITION TWO

Projector Power Control's Module power to its circuit board is "off". (All LEDs off.)

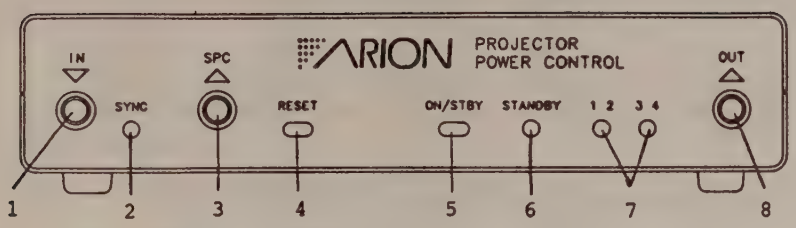
This can occur if the power switch is in the off position, or if the power at the AC receptacle is off.

When no Mate-Trac sync signal is present.

Switching "on" the projector Power Control Module: a) AC power will automatically be applied to the projectors, b) the SPC single projector controls will home the slide trays to zero position and then to tray position 1, and c) when all trays are at tray home position, the Projector Power Control Module will turn off the power to the projectors.

When Mate-Trac sync signal is being received by the Projector Power Control Module.

When power is restored to the Projector Power Control Module, 1) projector power will be restored, 2) trays will not home, and 3) red LEDs on the SPC reset tray button will light. This indicates that the system may need to be reset.



Front Panel Description:

1. Sync signal input - receives Mate-Trac sync signal from tape, programmer, or converter. 1/4" phone jack.

2. Sync LED (Green) - indicates that the Projector Power Control Module is receiving Mate-Trac sync signal.

3. SPC sync signal output - Mate-Trac sync signal is output to the SPCs (single projector controls). Telephone receptacle. (RJ11)

4. Reset button - this button affects only the SPCs connected the unit. Pressing the Reset button will cause the slide trays to cycle to the zero position and then to the starting tray position. Whenever the Projector Power Control Module is receiving Mate-Trac sync signal, the reset button is disabled.

5. ON/Standby button - this button is a momentary push type. If the power is "on" to the projectors, pressing the button will turn the power to the projectors "off". If the power is "off" to the projector, pressing the button will turn the power to the projectors "on". (Trays will not cycle.)

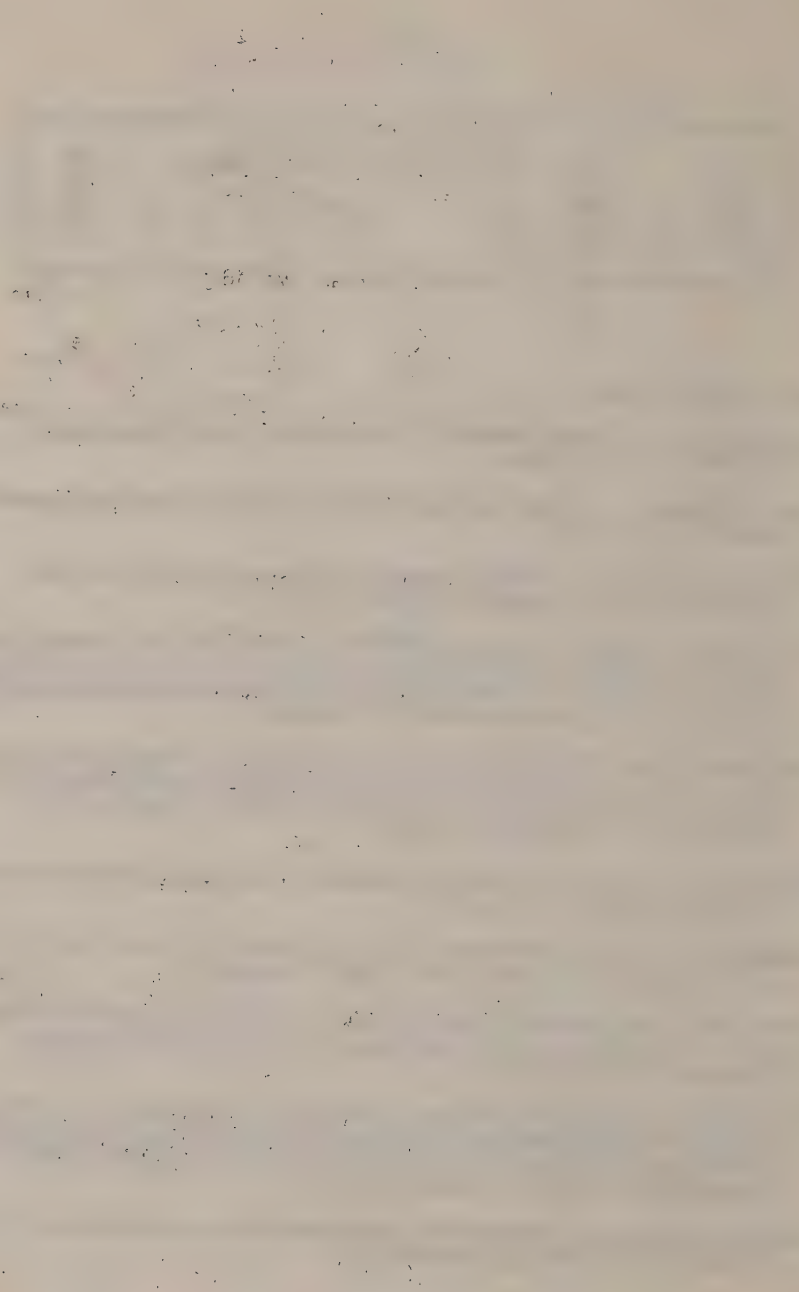
   Whenever Mate-Trac sync signal is being received by the Projector Power Control Module this button is disabled.

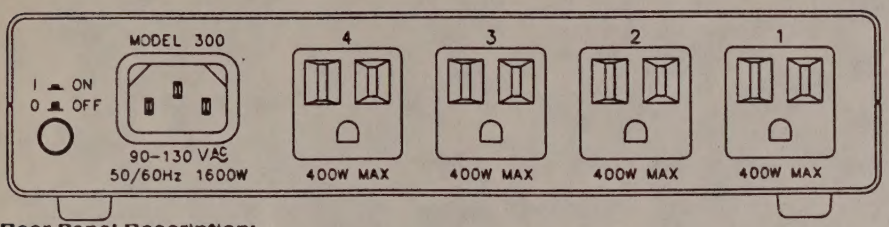
6. Standby LED - indicates that the power is "on" to the Projector Power Control when power to the projector power is "off". This LED is yellow.

7. Power LEDs - one indicates the power to outlets 1 and 2 and the other to outlets 3 and 4. When the power to the projectors is "on", the LEDs will light green indicating a "GO" condition.

8. Other power control sync signal output - this passes the input Mate-Trac sync signal to other Projector Power Control Modules. 1/4 inch phone jack. Stereo cables are used between Projector Power Control Modules when using the Arion Producer TR recorder in the auto present mode.

   This output can also connect Mate-Trac sync signal to other Arion devices such as: auxiliary decoders, light dimmers, etc.





Rear Panel Description:

AC in receptacle - cable connects to AC line. Use cable with 16 gauge or larger wire,

AC out receptacle - these four receptacles are rated at 400 watts each and are numbered from 1 through 4. Projector AC power cables plug into these receptacles. When power is turned on to the projector receptacles, the sequence is 1 and 2 on first, then a half second later receptacles 3 and 4 are turned on. Projectors can be plugged into the Projector Power Control Module randomly and need not match receptacle numbers.

Power switch - this switches the power on/off to the Projector Power Control Module itself.

PROJECTOR POWER CONTROL MODULE SET-UP

With power cable of the Projector Power Control Module not connected to the AC receptacles:

1. Plug projector power cables into the receptacles located on the rear of the Projector Power Control Module.
2. Connect the first SPC to the 'SPC' output receptacle of the Projector Power Control Module. Connect the other 3 sync cables to each other.
3. Switch all projector power switches to the fan position.
4. Plug AC power cable of the Projector Power Control Module into a wall receptacle (mains).
5. Turn on power switch of the Projector Power Control Module. The first two projectors will turn on, half a second later the other two projectors will turn on. The trays will seek zero position and then go to their starting positions.
6. Connect the sync output of the Projector Power Control Module to the next Projector Power Control. Repeat for each group of projectors.
7. After all power cables and projectors have been connected, plug cable from Mate-Trac source (tape recorder, programmer, or decoder) into the sync input jack of the Projector Power Control Module.
8. Show is now ready to run.

NOTE: If all projector switches are not in the fan position, the power will not turn off to any of the other projectors.

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